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THE
NATURALIST:

A
MONTHLY JOURNAL OF

Natural History for the North of England

EDITED BY

W. H. PEARSALL, D.Sc., F.L.S., and W. R. GRIST, B.Sc.,
THE UNIVERSITY, LEEDS

with the assistance as referees in special departments of

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* Deceased, 1940.



1940.

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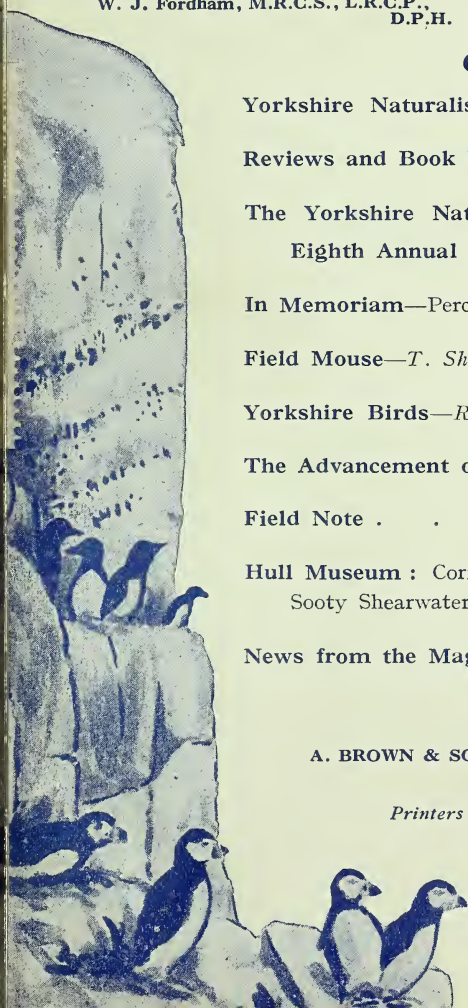
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THE NATURALIST

FOR 1940

YORKSHIRE NATURALISTS' UNION

Annual Meeting, December 2nd, 1939

OUR Scarborough friends had invited us to hold our Annual Meeting there, but the restricted travelling facilities and the black-out were two obstacles which the executive felt would make this venue impossible, and it was felt that only a daylight meeting in a central place would be possible under the conditions at present existing. Fortunately, Professor J. H. Priestley offered help and the Leeds University authorities kindly provided us with all the accommodation we required. We met at 11 a.m., when the sections made their nominations for the various officers and committees. The General Committee followed at 12 noon, and the election of Secretary, Treasurer, etc., and of the various committees was carried out and the following names were added to the General Committee: Dr. Edna M. Lind, Miss J. Grainger, Miss D. V. Burch, Mr. Rex Procter, Mr. J. P. Utley, Mr. P. Burnett, Mr. W. Pickles, and Captain S. E. Evans. It was resolved that the names of members serving with the forces should be retained until the end of the war.

After lunch we met for the Annual Meeting and the Vice-Chancellor of the University, B. Mouat Jones, Esq., M.A. welcomed the Union and voiced the general feeling when he said, 'I want to congratulate you on not permitting Herr Hitler's so-called war to prevent you from following your laudable and useful activities.' He was thanked by Mr. E. G. Bayford and Mr. W. H. Burrell; then our President gave his address, and he was thanked by the President of the Vertebrate Zoology Section, Mr. E. W. Taylor, and by Mr. H. B. Booth.—C. A. C.

The Mind of the Bees, by **Julien Françon**, translated by **H. Eltringham**, pp. xii+146. Methuen, 6/-. That Dr. Eltringham has translated this remarkable book is in itself a safe guarantee of its scientific value. M. Françon has for many years conducted a carefully conceived series of experiments with bees in order to discover whether bees have means of conveying information to one another regarding food, etc., discovered on their flights. The whole story of M. Françon's ingenious investigations is set forth in the clearest manner, step by step, and all naturalists who read his book will want to take part in a similar range of experiments. The apparatus required is simple and costs practically nothing, and the scientifically minded will want to vary the procedure. M. Françon does not say much about the behaviour of the 'messenger' bee when it reaches the hive the first time after a discovery. More than one well-known biologist has shown that when a bee makes a spectacular find it 'announces' this find in the hive by rapid wing-vibrations and a kind of dancing movement. Almost immediately, numbers of bees leave the hive and are shortly to be seen at the spot previously visited by the first bee. Other experiments seem to point to the use of a modified scent sense, and M. Françon's own conclusions do not rule out this possibility.

Transport in Many Lands, by **W. Robert Foran**, pp. 260 with 4 plates in colour and 34 in black and white by D. Newsome. Warne, 7/6. Everyone knows that in some countries elephants are used for haulage and that the camel is the 'ship of the desert,' but every country has its own problems of transport, and in Mr. Foran's book the whole subject is dealt with in an entertaining way. The author is a much-travelled man and speaks of what he has seen, and his descriptions are ably assisted by the excellent illustrations. Curiously, there is no mention of canals and barges.

THE YORKSHIRE NATURALISTS' UNION'S SEVENTY-EIGHTH ANNUAL REPORT

(Presented at Leeds on Saturday, December 2nd, 1939)

The Seventy-seventh Annual Meeting was held in the Royal Institution, Hull. The Annual Report was presented there and was printed as a whole in the January issue of *The Naturalist*, pp. 3-30, thanks to the generosity of Mr. R. C. Fowler Jones.

The Presidential Address on 'The Quest for the Primitive Flower' was given by H. Hamshaw Thomas, Sc.D., F.R.S., and is printed in *The Naturalist* on pp. 43-53.

The Presidency for 1940 has been offered to and accepted by Walter Watson, D.Sc. (Lond.), A.L.S., of Taunton, Somerset.

Field Meetings have been held in 1939 as follows: V.C. 63, Wentbridge on May 6th, see *The Naturalist*, pp. 215-218; V.C. 65, Middleton-in-Teesdale, May 27th-29th, see *The Naturalist*, pp. 262-266; V.C. 64, Ripon, Queen Mary's Dubb, June 17th, see *The Naturalist*, pp. 220-223; V.C. 61, Driffield, July 8th, see *The Naturalist*, pp. 296-298; V.C. 62, Castleton, Eskdale, August 5th-7th, see *The Naturalist*, pp. 299-304; Fungus Foray, Gilling West, Richmond, September 2nd-6th.

The Excursions for 1940 will be as follows:

May 11th-13th, Whitsuntide. Austwick, V.C. 64.

June 1st. Huddersfield, Dean Clough, V.C. 63.

June 15th. Selby, Skipwith, V.C. 61.

July 6th. Redmire, V.C. 65.

August 3rd-5th. Thirsk, V.C. 62.

Fungus Foray, Grass Woods, Grassington.

The following changes of address have been notified during the year:

Miss E. Bailey, to 29 Brow Top, Workington, Cumberland.

Mr. H. Barnes, to 74 Beaumont Road, Plymouth.

Mr. R. B. Brown should be A. B. Brown.

Miss Ebbage, to Tomlinson's Grammar School, Wigton.

Miss E. Gallwey, to Mrs. E. Hazlewood, 54 Somerset Road, Bolton, Lancs.

Mr. W. D. Hincks, to 23 Ayresome Avenue, Leeds, 8.

Mr. J. Hodgkinson, to The Drill Hall, Dewsbury.

Mr. S. H. Smith, to 210 Stockton Lane, York.

Mr. F. B. Stubbs, to 48 Cross Lane, Marple, Stockport, Cheshire.

Mr. and Mrs. A. Thompson, to 23 Regent Crescent, Sipton.

Mr. A. E. Winter, to Langton Lodge, Scotton, Knaresborough.

Mr. J. Wood, to 9 Raven Street, Keighley.

Mr. J. Wright, of Edinburgh, to 306 Saddleworth Road, Greetland, Halifax.

New Members elected during the year:

Mr. J. G. Appleyard, B.A., Manor House, Linton, Collingham Bridge.

Flying-Officer G. H. Barrett, R.A.F., Leconfield, Beverley.

Mr. R. Bramhill, Cottenham Road, Rotherham.

Mr. H. E. Benthall, High Cliff, Scarborough.

Miss E. M. Clegg, B.A., 66 Coniscliffe Road, Darlington.

Mr. C. Greaves, St. Mary's Hospital, Deanhouse, Holmfirth.

Miss M. Holt, Edge Hill Training College, Ormskirk.

Miss L. Laverick, M.Sc., Greenhead High School, Huddersfield.

Mr. W. Pickles, 23 Beech Grove Avenue, Garforth.

Mr. W. Smith, 28 Ings Road, Hull.

Resignations :

J. Holwell, Sheffield.
 T. Kerr, Headingley.
 T. O. Morris, Anglesey.
 Miss Maynard, Ben Rhydding.
 Miss Steinthal, Ben Rhydding.
 T. N. Roberts, Scarborough.
 Geo. Wells, Harrogate.
 R. A. Webb, London.
 The Milnsbridge Society.
 J. H. Ashworth, St. Anne's-on-Sea.
 A. M. Boyne, Hull.
 W. H. Cushin, Elland.
 R. M. Gladstone, Gosmont.
 K. Goudie, Catterick.
 T. L. Gwatkin, Halifax.
 W. Hobson, late of Leeds.
 Miss E. Holroyd, Huddersfield.
 G. H. C. Haigh, Grimsby.
 Miss E. Harvie (Woking), London.

Obituary.—The year has brought heavy losses to the Union by reason of the death of five Past-Presidents, Alfred Harker, M.A., F.G.S., F.R.S. ; Mr. Herbert E. Wroot ; Mr. Riley Fortune, F.Z.S. ; Professor A. Gilligan, D.Sc., F.G.S., M.I.M.E. ; and Percy H. Grimshaw, F.R.S.E., F.R.E.S. Other members who have died during the year are Rev. E. Peake, Mr. A. E. Greaves, Mr. C. E. Fox, and Mr. V. G. F. Zimmermann.

The War.—Members of the Union serving in H.M. Forces will be retained on the list of Members for the duration of the War. You are asked to help to maintain the body and spirit of the Union in 1940, under difficult conditions, by attempts to obtain new members, and by as much field and other work as circumstances allow.

British Association (T. Sheppard).—Mr. T. Sheppard reports that he attended the annual meeting of the British Association for the Advancement of Science at Dundee, but this did not seem to be as representative as possible. The news of the crisis, which was received on Friday morning, September 1st, rather upset the proceedings, and it was decided to bring the meeting to a close. The Conference of Delegates from the various scientific societies was interfered with in this way.

The Naturalist.—The Editors have been much encouraged by the increasing numbers of suitable articles which have been sent in. The change from two or three years ago has been very marked.

At the time of writing this report, matter in hand is sufficient to provide for four or five months' issues of *The Naturalist*. The Editors are endeavouring to preserve a reasonable balance as between lists of species observed, formal reports, etc., and informative articles likely to interest all naturalists. We should like still more of the latter type of contribution.

BIOLOGY SECTION

FRESH-WATER BIOLOGY COMMITTEE

Fresh-water Biology Committee (H. Whitehead) :—Satisfactory work has been carried out by members of this section during the current year.

Field meetings were held at Wentbridge, Queen Mary's Dub, Ripon, and at Driffield, and were attended by members of this committee. Reports on the meetings at Wentbridge and Queen Mary's Dub have already appeared in *The Naturalist*.

The Naturalist has also published other papers of interest to students of this type of fauna, e.g. 'Derbyshire Mayflies,' by J. M. Brown, and also 'Aquatic Coleoptera of Nottinghamshire,' by Prof. J. W. Carr. In the latter references are made to South-west Yorkshire records.

The subject Fresh-water Biology is a wide one, and those interested will find it useful to read through reports on Coleoptera and Mollusca taken on the various excursions.

(J. M. Brown) :—Reports of work done at some of the field meetings of the Union have been published in *The Naturalist* (1939, pp. 216 and 244) by Mr. H. Whitehead, who notes the taking of two interesting species, viz. the Chequered Leech (*Proteolepsis tessellata* Müll) and the Water-louse (*Asellus meridianus* Racov.) at North Stainley.

Surveys of local streams are being conducted, but results are not yet sufficiently advanced for recording.

The Crayfish (*Astacus pallipes*) in Yorkshire, 1939 (Sydney H. Smith, J.P., F.Z.S.) :

RIVER YORE AND TRIBUTARIES.—Large numbers observed in the upper and middle reaches of the Yore. Many in Gayle Beck, Hawes, and River Bain up to Lake Semmerwater. Observed in Robert Beck at Burton Leonard.

RIVER SWALE AND TRIBUTARIES.—Reported in the tributaries round Catterick and Brompton, but not in large numbers. Small numbers in the Cod Beck above Thirsk.

RIVER AIRE AND TRIBUTARIES.—Reported in the upper reaches above Shipton and in the tributaries at Bell Busk.

RIVER WHARFE AND TRIBUTARIES.—Reported from Otley up to Buckden with increased numbers in the Addingham area.

RIVER NIDD.—No report and none observed.

LEEDS AND LIVERPOOL CANAL.—Reported between Newlay and Gargrave. Fair number observed in August in the spillway at Saltaire Locks.

I am indebted to Mr. R. W. Ward, Clerk to the Yorkshire Fishery Board, for his help in obtaining notes.

VERTEBRATE ZOOLOGY SECTION

MAMMALS, REPTILES, AMPHIBIANS AND FISHES

Mammalia (Mrs. A. Hazelwood) :—A small specimen of the Lesser Rorqual, 12 feet long, was stranded alive at Flamborough on March 22nd, 1939. After being ashore for six hours it escaped and swam away. It was identified by Mr. F. C. Fraser, of the Whale Department, British Museum, from a photograph.

Common Seals frequented the Scarborough harbour on numerous dates between November 15th, 1938, and April 1st, 1939.

A female White-beaked Dolphin, 9 feet long, was caught at sea 25 miles E.N.E. off Scarborough on July 18th, 1939. Another, a male measuring 7 feet in length, was taken 26 miles N.E. off Scarborough on August 9th, 1939.

In York district Foxes have been plentiful and afforded sport to three packs of hounds. Near Huddersfield there was a marked increase in their numbers in the spring, and considerable damage was done.

About a dozen Otters have been killed by hounds in tributaries of the Ouse, Derwent, and River Rye. These rivers have plenty of deeps

and secure holts in their banks. In the *Bradford Telegraph and Argus* of December 16th, 1938, it was recorded that Mr. J. Mallinson, of Kettlewell, river-watcher to the Kilnsey Angling Club, had recently trapped another Otter on the Upper Wharfe, which made his 'bag' up to 46 during the forty years or so of his employment there. A female weighing 15 lbs. was killed by the hounds at Forge Valley on June 26th, 1939.

Badgers hold their own in their centuries' old earths at Castle Howard, Kirkham, and Kilnwick, near Pocklington. On making enquiries from the keepers *re* Badgers, Mr. Pickles ascertained that there are none at Parlington at the present time, and that during the past few years one only was seen, travelling by night. Neither are there any at Potterton or Becca, although the latter estate has been visited by them in the past. At Hazelwood there are two old Badgers, but no young ones last year. There are several Badgers on the Bramham estate, but no record of any young ones having been seen. Mr. Chislett saw a Badger some three months old in July, but this had been caught on the Nottinghamshire side of Tickhill. Mr. Utley reports the species as still evenly spread in the north-west, although not common; one run over by a car in February 1939 weighed 32 lbs.

It was reported that a Polecat had been seen in Hebden Bridge Valley, but as domesticated polecat-ferrets are often reported as Polecats, further identification and verification are necessary before the record can be accepted. On May 28th, 1938, Mr. James Cooper, of Killerby Hall, near Cayton, wrote: 'About a month ago I had a Polecat in my garden. I saw it three times and could have shot it. It was quite 2 feet long from nose to tip of tail; there could be no doubt about it for I know the ferrets so-called polecats.' Later Mr. Cooper wrote: 'I don't see that it could be anything but a Polecat—it certainly was not an escaped ferret. I have had what are called polecat-ferrets, and it wasn't at all like one, and would not be big enough for a pine marten.' Mr. Utley reports a pine marten in Swaledale in December 1938.

Stoats and Weasels remain about normal.

Red Squirrels remain abundant around Huddersfield. Mr. Smith has not seen one in the York district this year, and only heard of one having been observed at Buttercrambe. In the North Riding the only record submitted is of one which had been run over by a car at Cloughton plantation on June 28th, 1939.

North American Grey Squirrels make very slow progress in invading Ben Rhydding neighbourhood, although two old ones and a young one were killed in Denton Park this autumn. In the North Riding it keeps up its numbers and is especially numerous at Thornton Dale and district.

Mr. Smith reports that, around York, Wood Mice and Short-tailed Field Voles are at usual strength and probably the wet has helped to keep them down, although the increase in carrion crows, magpies, and kestrels may have bearing on this fact. In the spring Wood Mice were abundant in Ravensknowle Park, Huddersfield, and were of an unusually drab colour.

A female Brown Rat killed near Scarborough by Mr. Peck on November 14th, 1938, weighed 1 lb. 2 ozs., and measured 19 inches long, the largest of its sex so far weighed and measured locally.

The Black Rat is now very much scarcer about Scarborough harbour and shipping than formerly, only four having been trapped during the year, but doubtless many die from the poison freely distributed and their bodies are not seen.

Rabbits have been abundant everywhere. Around York, Brown Hares are below the average in numbers, which may be due to much rain when the leverets appeared.

Moles were abundant around Huddersfield, and Hedgehogs have been numerous everywhere. A Water Shrew was picked up dead at the Scarborough Mere on February 2nd, 1939, by Mr. T. N. Roberts.

Long-eared and Pipistrelle Bats are recorded from York, Keighley, and Huddersfield.

Reptilia (Mrs. A. Hazelwood) :—Mr. Smith says that moor fires in previous years, and in early spring, may have reduced these creatures as he has not seen an Adder, Grass Snake or Slow-worm at Strensall or other familiar haunts. Mr. Chislett has seen several Grass Snakes near Hatfield, but only one Adder. I have no reports of Lizards.

Amphibia (Mrs. A. Hazelwood) :—Toads spawned abundantly near Huddersfield in the spring, but they were not so common this year around York and no toad spawn was seen near Bolton Percy. Frogs, however, have had a good year. Spawn was first noted near York on March 15th, and near Bolton Percy on the following day.

The Common Newt is much less common around Huddersfield than nine years ago, during which time there has been a gradual decrease in its numbers and in its breeding places. Common and Crested Newts have been noticed around York, but not in abundance. A female Crested Newt was found in the garden of a house bordering on Hook Moor on September 3rd, where it is of rare occurrence.

Pisces (Mrs. A. Hazelwood) :—Red Gurnard (*Trigla cuculus*) has occurred off the North Riding coast in small numbers throughout the year. Specimens noted were one on February 23rd, one March 13th, three May 8th, and one on May 22nd.

Tunny (*Orcynus thynnus*) were first noted off the coast on July 6th, forty miles E.N.E. off Scarborough. Ten were captured on rod and line, ranging from 713 lbs. to 529 lbs. in weight. Due to the war, fishing was stopped while the fish were still numerous.

Three examples of Ray's Sea Bream (*Brama raii*) were noted during the year. One weighing 5 lbs. 1 oz., 22½ in. long, was stranded on Scarborough sands on November 4th, 1938, and taken to the Museum; one, stranded alive at Filey on November 12th, 1938, was found by Mr. J. Jenkinson; and there was one on Scarborough Fish Market on December 5th, 1938.

A Lesser Forkbeard (*Raniceps raninus*) was caught from the shore on rod and line at Robin Hood's Bay on July 4th, 1939.

A Halibut (*Hippoglossus vulgaris*), weighing 123 lbs., was trawled off Scarborough by the motor boat *Magnet* on July 18th, 1939.

A small Turbot (*Rhombus maximus*), weighing 3 lbs., all white on both sides, was landed by a Scarborough trawler in May.

A marked Plaice (*Pleuronectes platessa*) captured 40 miles E. off Flamborough by the steam trawler *Riby* on March 4th had been liberated on October 5th, 1937, 3½ miles W. by N. off Haisborough Lightship. It then measured 11 ins. in length; when recaptured its length was 13¾ ins. An Albino weighing ½ lb. all white on both sides above and below, excepting the head, which was brown on both sides, was trawled near Scarborough in May.

A fine Chub for the River Aire was caught near Carlton by Mr. W. Phillip, of Skipton, in December, 1938. It weighed 3 lbs. 5½ ozs.

A Trout weighing 3 lbs. 3 ozs. was caught in September, 1939, in Whinny Gill Reservoir, Skipton.

A Snake Pipefish (*Nerophis aquoreus*) about 20 ins. in length was washed ashore at Flamborough on January 17th, 1939.

Two Allis Shad (*Clupea alosa*) were landed at Scarborough by the steam trawler *Acuba* on February 20th, 1939.

Examples of Twaite Shad (*Clupea finia*) were seen on the following dates, all trawled near Scarborough. One on December 9th, 1938; one January 13th, 1939; three up to 18 ins. long on February 18th, 1939; 48 up to 19 ins. long landed in one haul by the steam trawler *Acuba* on February 20th.

One Sturgeon (*Acipenser sturio*) about 16 feet in length was stranded near Hunmanby Gap on March 28th, and was afterwards washed away by the tide.

Tope (*Galeus vulgaris*). This shark has been common off Scarborough during the summer of 1939.

Porbeagle Shark (*Lamna cornubica*) was numerous off the Yorkshire coast during the summer, many from 6 to 8 feet in length being caught in the nets. Three were captured on rod and line on July 26th, and weighed 224 lbs., 106 lbs., and 89 lbs.

Two examples of the Electric Ray (*Torpedo nobiliana*) have occurred during 1939. One 30½ ins. long and 20 ins. wide, weighing 15 lbs., was captured alive by Mr. E. White in shallow water at Whitby and was taken to the Museum there. Its colour was purple-brown above, white beneath, upper edges of fish almost black, the spiracles being oval and smooth on their edges. A second specimen was caught in the salmon nets at Filey on July 12th. It measured 25 ins. long and 18 ins. wide. The back of the fish was dark blackish-grey, white beneath; spiracles smooth and oval in shape. This fish was alive when captured and gave a sharp electric shock when handled.

For assistance in compiling the above report, I am much indebted to Messrs. S. H. Smith (York), C. F. Procter (Hull), W. Greaves (Halifax), R. Chislett (Rotherham), H. B. Booth (Ben Rhydding), and W. G. Bramley (Bolton Percy), and to Mr. W. J. Clarke (Scarborough) for the North Riding report. I should also like to add a note of appreciation for the valuable and accurate records supplied for these annual reports for many years by Mr. V. G. F. Zimmerman, who passed away in June of this year. His kind co-operation is sadly lost to our Section this year.

ORNITHOLOGY

(Ralph Chislett).—The year has been one of considerable activity which continued until the end of August. Field workers who have contributed to the several following reports dwell in many parts of the county, and in addition to the watch they keep over both normal and abnormal events in their own districts, most of them also habitually visit one or more of the more important centres of interest, such as the sheets of water at Fairburn and Swillington, the groups of reservoirs around Halifax, north of Leeds, and elsewhere, the ponds at Skipwith, the lake at Castle Howard, Semmerwater, Spurn Point, and occasionally Teesmouth.

W. Greaves has completed his analytical summary of the bird-notes contained in *The Naturalist* back to 1906—a considerable contribution toward the project to bring the birds of Yorkshire up to date. Lists, some of them containing much valuable detail, of species breeding and occurring in many districts are coming in as contributions towards the same purpose, but still more are wanted.

To give due prominence to some of the more important facts of more than Yorkshire significance, and to enable some notes of different recorders concerning the same species to be stated together, the following have been extracted from the recorders' reports. Next year, it is hoped that all reports will be received in time to enable them to be sorted systematically and issued as a whole.

The British Goldfinch. This species is reported as still increasing in several parts of all the Ridings—near Scarborough, near Hornsea (where 12 nests are reported), near Driffield, while A. Gilpin reports a party of not less than 15 at Alwoodly, Leeds, on April 2nd, and two birds at the same place on August 26th.

The Siskin. Is another species seen in the county rather more often than formerly. Small parties are now seen not infrequently in the south and south-west of the county in the late autumn. In March, in

Scarborough, a flock of 15, later increased to 75 birds (W.J.C.). In the North Riding there is strong, though not entirely conclusive evidence of breeding. A nest with eggs came to grief and was sent to the Rev. F. C. R. Jourdain, who thought the eggs were Siskin's, but could not be quite sure. The nest was found from observation of the birds by a labouring man who knows the species well having kept captive birds, and who had no doubt of the species (W.S.M.).

The Common Crossbill. Two small parties were seen near Thornton Dale on various dates during the 1938-39 winter, and a nest was found by R. M. Garnett in early April, 1939, about 25 to 30 feet up a scots pine, from which young left the nest early in May. W. S. Medlicott saw a dozen birds near Glaisdale on December 14th, 1938. Parties varying in numbers were observed in a number of woods in the north-west (J.P.U.). Birds are also reported from the Hessle area in January and February, 1939 (W.W.N.).

The Short-eared Owl. This species was reported from many districts during the winter months, and from several in the early spring. Five young were hatched on Hawksworth Moor, but one parent was found dead near to the nest on June 14th, the other one being in attendance. A few days later a gull was seen to rise from the nest, and one of the young was found to be badly lacerated—normally young Short-eared Owls are almost invariably guarded by a parent. On the following day all the young were dead, but the surviving old bird was seen on the moor for some weeks later (W.F.F.). Although several times previously reported as nesting in Upper Wharfedale, this is the only authenticated case known by H.B.B. in a district where the Long-eared Owl also occasionally nests on the ground. Two nests of the Short-eared Owl were found in the North Riding, one of which also came to grief (W.S.M.); and the species was suspected of breeding in South Yorkshire, as well as in the Halifax area where it is now of yearly occurrence. J. P. Utley also reports the species as breeding in the north-west.

The White-tailed Eagle. An eagle, believed to be an immature bird of this species, frequented the Yorkshire and Derbyshire borders, about the upper reaches of the Derbyshire Derwent, from February 20th to March 19th. Good views of it were obtained by E. H. Peat, A. Whitaker, Professor C. J. Patten, and others.

The Goshawk. On January 9th, 1939, near to Runswick Bay, 'I watched this bird hunting for some minutes. Having kept several for hawking purposes and trained them I have no doubt whatever as to its identity' (W.S.M.).

The Osprey. The presence of this species about Semmerwater in the winter of 1938-39 was recorded by J.P.U. (*Naturalist*, 1939, p. 132). Early in May, 1939, F. Ball, the head-keeper at Denton, Wharfedale, found a grayling on the river bank with deeper claw-marks upon it than an otter would have made. On the following day, whilst examining some fish scales and bones under an oak tree with bare upper branches, he saw a large hawk making for the tree carrying a fish in its talons. In his excitement he rushed out and fired his gun to make the bird drop the fish, which proved to be a grayling 11½ inches long. This bird could only be an Osprey. It was seen again on the following day, after which it appeared to leave the neighbourhood (H.B.B.). On August 7th, 1939, C. A. Norris had excellent views of an Osprey at Spurn which displayed its underwings, breast, and white on head very clearly as it flew over, and disturbed a flock of waders.

The Pintail. The keeper at Skipwith reports that the species again nested on the Horseshoe Lake and that he saw the ducklings (S.H.S.). At the same place there were 8 or 10 pairs on March 15th. At Swillington five were seen on February 19th, March 19th, April 2nd, and 23rd (Halifax notes).

The Temminck's Stint. The occurrence of this species inland in England is a rare event. Seven birds were watched at Ringstone Edge Reservoir, Halifax, on June 1st and 2nd, 1939, and a single bird appears to have lingered there until June 27th, having been seen several times in the meantime (see *The Naturalist*, 1939, p. 197). Another bird was seen on September 24th at the Elland Sewage Works. The party of Halifax observers included V. S. Crapnell and G. R. Edwards, who in 1934 and 1936 added the Temminck's Stint to the list of birds that have nested in Great Britain. Further records of occurrences of much interest from the same group of reservoirs will be found in the West Riding Notes of H. B. Booth.

The Black Tern. In *British Birds*, 1938-39, pp. 64-77, Mr. P. A. D. Hollom summarises 'Inland Occurrences of some Waterfowl and Waders,' in which Yorkshire records of this species appear to be insufficient to account as an outlet to their breeding quarters for the Black Terns recorded in spring in Cheshire and South Lancashire. On June 4th, 1939, one bird was seen at Ramsgill in Upper Nidderdale (P.S.), and two birds at Swillington (V.S.C., and H.F.). On August 24th an immature Black Tern was observed on Hornsea Mere, and two on the coast north of Easington (C.W.G.P. and C. G. des F.). On September 10th four birds were seen at Swillington (V.S.C. and H.F.).

The Arctic Tern. One pair was seen to be feeding newly-hatched young near Spurn on June 25th, 1939, by J. Lord and G. H. Ainsworth, who to determine the species erected a screen and watched from close quarters. A pair had been suspected of breeding in 1938. I have been unable to find a previous record of the breeding of this species in Yorkshire.

The Black-headed Gull. A ringed bird found dead at Eccup Reservoir on December 17th, 1938, had been ringed as a young bird at Lake Hornborgasjön, Sweden, on June 20th, 1937 (P.S.).

The Black Guillemot. *Apropos* of the pair of this species seen to be feeding young on August 24th, 1938, by the late V. G. F. Zimmermann; a pair of adults in breeding dress were seen at close quarters near Filey on September 24th, 1938 (W.J.C.).

The Corncrake. Remains absent from the vast majority of our fields, A few pairs are reported from the north and east. At Kirby Moorside a pair nested at the same place as in 1938; two chicks being seen on July 30th. Near Newby, Everley, and at West Ayton birds were present all summer. Others were heard calling at Marton, Levisham, and Kirkdale (W.J.C.), and in Bishopdale, near Hawes, near Ingleton, near Bridlington, and near Hunmanby. In Littondale a bird was seen to cross a road. The note was heard by E. W. T. on Clifton Ings, Naburn Ings, and Fulford Ings, all near York. Three separate birds were heard in June between Otley and Ilkley on several occasions (W.F.F.). It is strange to be recording isolated records of a species which was abundant all over the county 25 years ago.

The Gannet. Mr. M. Stewart reported that at Whitsuntide, at Bampton, from a boat, he was able to see four pairs of Gannets near together at a site suitable for nesting. A heavy sea prevented a closer approach than 100 yards, but not the use of binoculars. As little climbing was done at this place this year it is not known if more than one pair reared young. After the successful rearing of a young bird in 1938, this continued evidence of the possible beginning of a new British colony is of much interest.

West Riding (H. B. Booth, F.Z.S., M.B.O.U.) :

The Heron. At Healaugh on April 2nd there were 26 nests (the same number as last year) made up as follows : 16 nests in oaks, 6 in ash, 3 in spruce, and 1 in larch (K.W.). At Gargrave there were 29 occupied nests (W.F.F.), and 7 or 8 nests at Hubberholme. On May 7th

I could not find either a Heron or a Heron's nest at their usual nesting-site in Harewood Park. The reason was apparent. Workmen were at work in this wood, sawing and splitting all the fallen and dead trees into lengths. The head game-keeper (Wilson) later informed me that three, or possibly four, pairs had nested in another part of the park not far away. This against 17 occupied nests last year. Misses Maynard and Steinthal reported there were only three nests with young in Park House Ghyll. But in addition to the three birds that left their nests, 14 other Herons rose from the ground. Here also woodmen were at work felling trees. I have made numerous enquiries for nesting Herons elsewhere without success, and am of the opinion that many of the birds in these two last-named heronries did not nest at all this year, because of being disturbed by woodmen.

The Whooper Swans. At Harewood the two unopinioned Whoopers that I mentioned in my 1936 report (*Naturalist*, 1937, p. 19) disappeared in the spring of 1937 and have not since returned. The status of these birds on the lake on May 7th was nine adults and two cygnets hatched last year. One pair was incubating four eggs, and another pair building a nest which later they deserted.

The Oyster-Catcher. Appears to becoming firmly established as a nesting species in the West Riding. There were two pairs near Gargrave. I saw one bird incubating and was informed that the other nest had been robbed. Two more pairs nested on the Ribble below Settle (R.B.S.). Another pair has brought off broods for three successive years near to Clapham (C.A.C.).

The Ringed Plover. Appears to be following the previous species. Two pairs on Malham Moor were undoubtedly nesting, or going to nest there. On June 4th, the birds were flying about singly or in pairs and returning to near the same spot. But in spite of the efforts of about a dozen members of the Bradford Natural History and Microscopical Society we were unable to locate their secrets. Another pair and nest, but without eggs, was seen at Gowthwaite Reservoir on June 21st (W.F.F.).

The Rook. Miss Dorothy Clough again counted the Rooks' nests in the Steeton rookeries (including Shrogg's Wood) and reported 314 occupied nests this year.

The Peregrine Falcon. Four fine young birds got off from an eyrie watched by the Y.N.U., after the first laying of eggs had been robbed. Another pair are believed to have nested successfully (T.W.I.C. and others).

The Little Owl. A pair nested in a quarry near to the boundary of Denton and Askwith, near Ben Rhydding. The family of about five young birds were watched for some time on August 13th, just as they were able to fly from bush to bush (W.F.F.). This is an uncommon bird about here, but is well established and fairly numerous in the southern part of the Riding (R.C.).

The Merlin. Three young were hatched on Ilkley Moor. They were first seen on July 12th, with one adult in attendance, and were seen again several times in the following fortnight (W.F.F.).

The Sand Martin. This species returned in larger numbers than usual this year. About two dozen were at Ben Rhydding on April 15th, and by April 22nd half a dozen pairs had worked holes into a newly-cut bank. In *The Naturalist* for 1939, p. 236, a truly wonderful assembly of these birds is recorded at Swillington on July 25th and 30th, estimated at over 1,000 birds. At Fairburn, on August 15th, a similar assembly is reported by R.C., who carefully estimated that there were quite 500 settled in two trees standing in the flood water, and more than 100 more flying around. As he came away a Sparrow-hawk flew past with a Sand Martin in its talons. The last Sand Martin was seen at Ben Rhydding on September 9th.

The Swallow. A pair were feeding young on the rafters of a barn where the nest was on October 3rd.

The House Martin. Two pairs were feeding young in the nest on October 7th.

The Wood Pigeon. A bird was flushed from a nest containing two half-grown young on October 15th (R.C.).

The Nuthatch. Although a scarce bird in the southern part of the Riding there are usually two or three pairs there in one wood (R.C.).

The Pied Flycatcher, which has been returning in dwindling numbers to its Wharfedale habitat for some years, has this year returned in greater numbers (Rev. C.F.T.).

The Starling. The new roost near Bolton Abbey, noted in my 1938 report, was the largest I have known in this part of Wharfedale. A few of the birds continued to sleep there for the most part of the year ; but this autumn the bulk of the birds appear to have gone elsewhere. During the summer, boys picked up a number of rubber rings, about the circumference of a half-penny, from the pine needles in this plantation, which had evidently been dropped by the Starlings. There was no evidence to prove if the rings had been passed by the birds, or had been ejected through the throat.

The Stonechat. A pair nested at Elland for the first-known time in the Halifax district (*Naturalist*, 1939, p. 196).

UNUSUAL VISITORS TO INLAND RESERVOIRS, ETC. (DUCKS, WADERS, ETC.).

The Shelduck. One on Eccup Reservoir January 29th, two on February 19th, and two on March 30th (P.S.).

The Garganey. At Fairburn, on May 9th, two drakes and one duck in courtship flights (P.S.).

The Pintail.—See notes in Preface.

The Shoveller. At Elland Sewage Works, two on July 26th (H. Notes).

The Pochard. At Eccup Reservoir, first seen November 13th, 1938, last seen February 5th, 1939 (P.S.).

The Scaup. At Ringstone Edge Reservoir. Two on January 1st and 3rd (H. Notes).

The Golden Eye. At Eccup Reservoir, first seen on October 30th, 1938, usually one to three birds present (P.S.). At Ringstone Edge Reservoir, one on January 3rd, 1939, and two on January 8th. At Withens Reservoir, two on April 16th (H. Notes).

The Long-tailed Duck. At Ringstone Edge Reservoir, one duck on January 20th and 22nd, 1939 (H. Notes).

The Common Scoter. At Chelker Reservoir, three on July 20th (W.F.F.). At Eccup Reservoir, three on October 30th, 1938, one drake July 19th, 1939, and one duck, July 23rd (P.S.). At Ringstone Edge Reservoir, four on July 19th, 1939, four on July 22nd, and sixteen on July 23rd (H. Notes).

The Goosander. At Eccup, first seen on October 30th, 1938, last seen May 13th, 1939. The largest number seen was 58 on February 5th (P.S.). On Lindley Reservoir, ten on October 28th, an early arrival (G.W.W.). On Eccup Reservoir, 19 on January 22nd ; and on Malham Tarn, seven on March 12th (H. Notes).

The Smew. On Eccup Reservoir, a duck and drake on January 28th, and two drakes with five ducks on February 14th, 1939 (P.S.). At Swillington, nine on January 29th ; and at Fairburn, two on January 18th ; also one at Malham Tarn on March 12th (H. Notes).

The Ringed Plover. At Ringstone Edge Reservoir on several dates, and elsewhere.

The Turnstone. At White Holme Reservoir, one on September 17th, 1939 (H. Notes).

The Ruff. At Elland Sewage Works, three on September 16th and 17th, 1939, one on September 24th, and two on October 7th (H. Notes).

The Sanderling. At White Holme Reservoir, one on August 1st (H. Notes).

The Little Stint. At Elland Sewage Works, 13 on September 12th, 1939, 14 counted on the following day, and 12 on September 16th and 17th (H. Notes).

The Temminck's Stint. (See note in Preface).

The Wood Sandpiper. At Ringstone Edge Reservoir, one on June 5th (H. Notes).

The Green Sandpiper. Odd birds seen regularly at Elland Sewage Works from July 7th to September 5th, 1939 (H. Notes).

The Greenshank. At Gowthwaite, one on October 8th (W.F.F.). At Ringstone Edge Reservoir, four on June 1st, and two on June 2nd. At Elland Sewage Works, two on August 14th, and one on August 29th until September 10th (H. Notes).

The Knot. At Redmire's Dam, 20 on August 6th (H. Notes).

The Iceland Gull. At Eccup Reservoir, one adult on February 26th, 1939 (P.S.).

The Common Gull. At Eccup Reservoir, several adults on July 23rd, 1939 (P.S.); and a number on January 22nd, 1939 (H. Notes). Two on Withens Reservoir on July 29th (H. Notes).

The Lesser Black-backed Gull. On White Holme Reservoir, on July 21st, a pair with three young (H. Notes). A few adults have been about the higher Moors throughout the breeding season ever since they were banished from their nesting site by Malham Tarn. No doubt a few pairs nest, or attempt to nest, each year in out-of-the-way places.

The Kittiwake. One dead at High Royd Sewage Works on April 11th (H. Notes).

The Gannet. One at Gorple Reservoir on January 29th (H. Notes).

A Coot. At Mytholmroyd on February 20th, 1939, and a Red-legged Partridge at Elland on October 15th are given as rare birds for the Halifax district (H. Notes).

DIVERGENCES FROM TYPE.

The usual number of male Blackbirds with some sprinkling of white feathers have been reported.

At Kirby Overblow, "two pure white Magpies, two pure white Blackbirds, and one pure white Swallow" have been reported. (See *The Naturalist*, 1939, p. 208.) Truly a remarkable assembly.

In a pair of Reed Buntings near Rotherham, with a nest of three eggs, on July 10th, the female, no doubt chiefly through abrasion, appeared like another cock, with brown-black head, black bib, and dirty white collar (R.C.).

Grouse Disease. Unfortunately, most of the Moors in Upper Wharfedale and in Upper Airedale, were more or less affected this year. Barden Moor suffered very badly and was not shot over.

Foot and Mouth Disease. To those who believe that this disease is imported and spread by immigratory birds, it is worthy of note that there was a rather bad outbreak of it in the West Riding in the middle of June this year, when bird migration was practically at a standstill.

To all those who have contributed notes for this report I wish to make due acknowledgement. Their initials will be recognised in the following list: Messrs. C. A. Cheetham, R. Chislett, T. W. I. Cleasby, W. F. Fearnley, A. Gilpin, P. Stocks, J. P. Utley, R. B. Sturdy, K. Wheeler, and G. W. Wrangham; and those keen Halifax men whose authority has been designated 'H. Notes,' as they contributed notes jointly: Messrs. V. S. Crapnell, G. R. Edwards, H. Foster, W. Greaves, H. Stansfield, T. Walden, and E. Watson.

North Riding (W. J. Clarke, F.Z.S.) :—Raven. A pair seen by Mr. R. Chislett in the North Riding during 1939. The species also bred successfully (J.P.U.).

Hooded Crow. These birds have been rather more abundant than in previous years. Several parties of up to 18 were seen near Thornton Dale, 10 near Scarborough on various dates.

Hawfinch. One picked up dead at West Ayton, February 2nd, 1939. A flock of 40 to 50 feeding on fruits of the Hornbeam at Castle Howard, October and November, 1938. A pair bred at Thornton Dale in 1939.

Lesser Redpole. Increasing considerably about Scarborough.

Yellow Bunting. A little more plentiful, but still much scarcer than formerly.

Snow Bunting. Two in Scarborough North Bay, March 29 and 30th, 1939. Three on the Castle Hill, September 21st, 1939. First arrived on the Moors on September 28th (W.S.M.).

White Wagtail. One seen at Scarborough Mere first week in October, 1939. One on May 5th, 1939, at same place.

Yellow Wagtail. Seen on spring migration at Scarborough, but no nest found.

Grey Wagtail. In usual numbers around Scarborough. A melanic variety was seen on several occasions in Peasholm Glen, Scarborough, at a little distance it looked quite black.

Water Pipit. Two were seen at Pickering on November 10th, 1938, two or three remained during the winter leaving at the end of March or early April, 1939, being then in almost full breeding plumage.

Nuthatch. One was seen in Castle Howard Park on November 9th, 1938, and two on August 16th, 1939. No trace of them could be seen or heard during the breeding season.

Willow Tit. A pair nested in an alder stump near Thornton Dale and were feeding young on June 4th, 1939.

Waxwing. One was seen feeding on rose hips at Thornton Dale in mid-January, 1939.

Grasshopper Warbler. A pair in Forge Valley during 1939. A passing bird heard reeling near Pickering, May 6th, 1939.

Reed Warbler. Two pairs at least at the Scarborough Mere during the summer of 1939. A nest was seen on May 28th in a willow bush 8 ft. up ; it was destroyed by lads.

Greenland Wheatear. A female was picked up dead in a Scarborough street, April 15th, 1939. Several passed through the North Riding about May 29th.

Black Redstart. A female seen at Hayburn Wyke on April 5th.

House Martin. More numerous about the villages, but scarce in the town. Many nesting at Pickering where all houses with suitable eaves sheltered nests, up to seven being built on one house. Many at Scalby, ten nests on one house. Fully fledged young were being fed in the nest on September 14th, and left on migration with their parents on the morning of the 18th. Three occupied nests were seen in the cliffs at Sandsend. Eight nests were built on a farm at Mowthorpe.

Green Woodpecker. Very numerous at Harwood Dale until the woods were cut down.

Swift. More numerous than usual. A pair were still feeding young in the nest at Castleton on August 7th, 1939.

Alpine Swift. 'On the last day of the visit of the B.E.N.A., near Whitby, an Alpine Swift was seen, distinguishable from the Common Swifts by the white chin and underparts.' Leslie Beckett, F.Z.S., in *Countryside*, Autumn No., 1938, and *Proceedings of Whitby Naturalists' Society*, 1938.

Kingfisher. A nest near Egton Bridge was dug into and destroyed by a rabbit. Breeding pairs hold their own on most of the streams near Scarborough.

Barn Owl. A pair nested at Killerby in 1938 and again in 1939. Two were seen at Yedingham, one near the Scarborough Mere, and one within the Borough boundary during 1939.

Little Owl. Two on a keeper's rack, Wykeham, June 15th, 1939. The numbers of this bird do not increase in the Scarborough area, where it remains scarce.

Montagu's Harrier. A pair tried to nest on the Yorkshire Moors, but the eggs disappeared. Another harrier's nest built among rushes, was found but was also robbed and the species was not certainly identified.

Hen Harrier. A female was seen near Thornton Dale on November 22nd, 1938, another at Troutsdale on April 26th, 1939, another near Goathland on October 28th.

Peregrine Falcon. A pair were seen in the North Riding by Mr. Chislett in 1939. A pair attempted to nest at Whitby High Light but were unsuccessful. One seen at Bent Rigg, March 29th, 1939. A pair bred successfully in the north-west (J.P.U.).

The Common Buzzard. A pair have bred successfully in the north-west (J.P.U.).

Grey Geese. Many passed in early November, 1938; about 200 were seen in one flock.

Pink-footed Goose. On November 9th, 1938, one shot was a Pink-footed Goose. Approximately 500 passed in one flock over Staxton on November 30th, 1938.

Bean Goose. One was shot on the north shore, Scarborough, on December 25th, 1938.

Whooper Swan. One, immature, was seen in the North Bay, Scarborough, on November 28th, 1938, and definitely identified. Two adult and two immature Wild Swans had been in the South Bay two days before and departed in a northerly direction, but they were not certainly identified. Throughout the winter Whoopers were always present on Semmerwater, numbers varying from 7 to 32. In March they were joined by four Bewick Swans. Eleven Whoopers appeared on November 4th, 1939 (J.P.U.).

Wildfowl. During the severe weather on the Continent at the end of December, 1938, many species of Wildfowl were seen about Scarborough, including Scaup, Shelduck, Smew, many Tufted, large numbers of Mallards, and big flocks of Pochards.

Mallard. A pair nested and hatched six young ones by the roadside in Forge Valley, within 6 ft. of the passing traffic. A partial Albino Mallard Duck, all white spotted with dark-brown, arrived on the Fishpond at Scarborough on March 16th and stayed for several days. An all-white drake arrived on the following day at the same place. It paired with a pinioned tame duck, two clutches of eggs were produced but both were robbed. Many pairs of Mallards nested at the Scarborough Mere.

Tufted Duck. Many visited the Scarborough area during the winter. Even on the Fishpond in the centre of Scarborough parties of up to 10 birds were frequently to be seen, staying until the end of March. Three last individuals being seen on April 5th, 1939.

Common Scoter. A flock of 20 to 30 seen off the Marine Drive, Scarborough, November 5th, 1938. Many in Filey Bay on November 23rd, 1938. On July 22nd one Common Scoter was present on Semmerwater; and on the 30th there were 54 very agitated birds which had gone on the following day (J.P.U.).

Goosander. A female at Scarborough Mere, December 30th, 1938. A male and female at same place on December 29th, 1938. A female on January 9th, 1939, and a male and female on January 22nd, 1939, all at the Mere. A male and female at Castle Howard, January 22nd, 1939.

Smew. A female visited the Scarborough Mere on December 30th, 1938.

White Stork. One apparently immature near Great Ayton, October to November, 1938.

Stone Curlew. Birds were seen on April 18th and on April 30th, 1939, but did not stay. One near the Dotterell Inn, May 17th, 1939.

Jack Snipe. Very scarce during the year. Five on November 17th, 1938, near Pickering, were the only ones noted all winter.

Woodcock. A large immigration along the coast during severe weather on January 5th, 6th, and 7th, 1939.

Green Sandpiper. Several seen near Pickering, most seen together three, leaving in early April. Two had returned by July 9th, 1939.

Iceland Gull. An immature bird was in Scarborough harbour on October 25th, 1938.

Little Auk. One found dead in Scarborough Mere on February 9th, 1939. Another picked up dead through oil, Scarborough, April 2nd, 1939.

Fulmar. Many in the Scarborough Castle cliff and at Cloughton and Burniston, Redcliffe, and Gristhorpe during the summer. One was seen flying over the Scarborough Mere more than two miles inland on May 1st, 1939.

Great Northern Diver. One close inshore at Scarborough, December 13th, 1938.

Black-necked Grebe. One on the Derwent, January 16th, 1939. Another in Scarborough harbour, January 30th, 1939. Another on Semmerwater on March 10th, 1939 (J.P.U.).

Water Rail. Scarce during the winter. One seen on October 3rd, 1938, and two on February 20th, 1939, near Pickering, at a place where previously they were numerous.

Coot. Several pairs nested and reared young at Throxenby Mere, near Scarborough.

Turtle Dove. Thinly distributed over the Scarborough area, occurred in their usual limited numbers and nested.

Red-legged Partridge. One was captured, exhausted, on the pier at Scarborough on March 21st, 1939. A pair nested in Forge Valley and were leading newly-hatched young ones on June 27th, 1939.

Red Grouse. Now almost disappeared from the Moors near Scarborough, owing, no doubt, to afforestation. One seen near Stainton Dale on January 22nd, 1939, is the only occurrence reported for the year.

Oiled Birds. Large numbers of Guillemots, Razorbills, Puffins, and other sea birds have been washed ashore during the period between January and April, 1939. On April 2nd, one Gannet, many Razorbills, Guillemots, some Black-headed Gulls, and one Little Auk were seen.

The recorder is indebted to Messrs. R. Chislett, A. S. Frank, R. M. Garnett, W. S. Medlicott, and T. N. Roberts for notes which have been used in compiling this report.

East Riding (C. W. Mason) :—The programme along Spurn Point, where a watch had been planned from late July until November, with only short breaks, throughout the migration season, had to be abandoned under the unpropitious conditions prevailing at the end of August. It is hoped to issue a further report later to include comparisons with some records made by Mr. H. F. Witherby in the years 1908-1911.

The Red-backed Shrike. A fine male could be seen about the bushes from May 18th to 21st, 1939 (R.M.G. and R.C.).

The Osprey. See Preface.

The Rough-legged Buzzard. Mr. A. Hazelwood reports that he received on November 24th, 1939, a male, almost completely moulted from the juvenile into the first adult plumage. The bird was killed near Langtoft while attacking a full-grown hare.

The Slavonian Grebe. A bird was seen on the East Park Lake, Hull, on February 5th, 1939 (G.H.A. and J.L.).

The Oyster-catcher. One pair hatched three eggs at Spurn, and another pair produced three young near Kilnsea (C.F.P.).

The Green Sandpiper. One was observed by a runnel at Spurn on April 18th (G.H.A. and R.C.). Six birds were flushed from ditches near to Kilnsea on August 21st (C.G. des F. and C.W.G.P.).

The Red-necked Phalarope. This species occurred near to Kilnsea on July 16th (L. Smith and H. O. Bunce, see *The Naturalist*, 1939, p. 235).

The Ringed Plover had a favourable season, many nests being seen on both sides of the Spurn Peninsula.

The Arctic Tern. See preface.

The Little Tern. After a cold wet spring, the first eggs were seen by W.S.B. on May 29th, when clutches were incomplete. Between that date and July 8th, 41 nests were marked down containing 106 eggs (28×3 , 9×2 , 4×1). In one nest an abnormally small egg was found. Favourable tides enabled a good hatch. At Kilnsea similar conditions prevailed.

Acknowledgements are due to those who have supplied notes, viz., Messrs. G. H. Ainsworth, W. S. Bullough, R. Chislett, C. G. des Forges, R. M. Garnett, J. Lord, C. W. G. Paulson, C. A. Norris, and C. F. Procter.

York District (Sydney H. Smith, J.P., F.Z.S.) :—A winter feature of the River Ouse at York is the large flock of Black-headed Gulls which now regularly make their appearance in October, and freely take scraps thrown from the bridges. On October 27th, 1938, a Kittiwake (E.W.T.) had joined the party and later in November a number of Herring Gulls in immature plumage stayed for some days.

On December 12th, 1938, a Comorant visited the city and circled the central tower of York Minster, and after appearing about to alight, changed its mind and made off (E.W.T.).

A Whooper Swan and Canada Goose were on the river during February, probably both were escapes, the former, perhaps, from Harewood (E.W.T.). The Whooper settled on Tang Hall Park and was there several months and may still be in the district.

A flock of about 30 Pochard wintered at Castle Howard and were joined by some 20 Teal at the end of January (E.W.T.).

Large numbers of Wild Duck frequented marshy places about York during the winter, some big flocks of Widgeon being seen at Skipwith, and on February 11th a shooting party got 75 during the evening flight.

There were four Great-crested Grebes in winter plumage on Castle Howard Lake, April 2nd; two pairs nested, two and one young being reared (E.W.T.); no doubt the pike are to blame for the small number of young reared, they also take a heavy toll of the young of other water fowl.

On March 15th there were at Skipwith twenty pairs of Shovelers, which nest regularly on the various water splashes on the Common. At the time of writing (end of September) a good number of Shovelers are to be seen.

The colony of Black-headed Gulls is still in existence and is probably supplying the nucleus for small detached parties which tend to establish themselves in other parts of the adjoining areas.

Two pairs of Nightjars nested at Skipwith on a bracken patch near the keeper's cottage where formerly a dozen pairs occurred—why this decrease? the species is quite harmless, and except for egg collectors is not molested by any other people. Perhaps the cutting of woodlands is the reason.

A Woodcock reared young in the Nightingale Wood, Skipwith, and was photographed by Mr. F. Vear.

Little Owls are common at Skipwith and have spread right through the Yorkshire Derwent Valley; a pair of these birds have nested for the

past seven years in a hole at the foot of a big oak tree on Mr. Dimmey's farm at Whenby, north-east of York, two young ones being reared. These birds were seen on September 23rd, but leave the oak tree about this time until the following March. Barn Owls, Long-eared and Tawny Owls are all fairly common in and around York, and on March 12th I saw a Barn Owl at 3 o'clock in the afternoon quartering the field behind my house in search of voles and similar small creatures. There are a few Short-eared Owls during the winter months, and E.W.T. says he saw one as late as April 25th on Tilmire.

Starlings have increased enormously in recent years, but I had to note the sky nearly black with them on the evening of March 12th and again on April 1st, they were flying at a good height east to west just before darkness set in.

All the migrant species were late in arriving and they had a most inhospitable reception during March, April, and May, the weather being bitterly cold with plenty of north-easterly gales and hail, rain, and sleet showers. Several species remained unnoticed until the weather changed in June and then all the Warblers were scarce. E.W.T. thinks they are decreasing in this district, particularly Whitethroats, and I think he is right.

Cuckoos, however, have been very plentiful as also have Sand Martins and Swallows, these last were feeding young as late as September 17th, no doubt second broods.

Curlews again nested at Skipwith and Strensall, but as our old helper, Mr. V. G. F. Zimmermann, died this year his report is absent and the notes on Curlews at Alne and other of his observations ended abruptly.

An Albino House Martin was seen on July 4th at Sutton, Tadcaster, and an Albino Swallow was seen at Escrick on August 4th. I had this report also from Mr. F. H. Edmondson, Keighley, which goes to prove there are some lynx-eyed naturalists in Yorkshire.

A brood of newly-hatched Partridges was seen on August 12th (E.W.T.) this may have been a second brood.

I have observed a number of double-brooded Song Thrushes and Blackbirds this year, both species are very common about York and they penetrate fearlessly amongst the houses all over the city. Every householder nowadays takes an interest in bird protection.

The first dates recorded on which migrant species were seen are all on the late side in 1939.

I am greatly indebted to Mr. E. W. Taylor for his helpful notes, and greatly miss the late Mr. V. G. F. Zimmermann, who for many years has been an accurate and valuable local observer.

Wild Birds and Eggs Protection Acts Committee (C. F. Procter and Ralph Chislett) :—Watchers were employed in the nesting season at Hornsea Mere, at Spurn, and over the welfare of special species elsewhere.

The Peregrine Falcon. Although the first eggs of the watched pair of birds were robbed, the birds laid again in a position more favourable to the watcher and a family of four was reared.

The Montagu's Harrier. A pair of birds arrived as for some years past, but it is to be regretted we were unsuccessful in our efforts to ensure hatching of the eggs this year.

The Stone Curlew. There has again been no proof that the species nested although a bird was seen.

Hornsea Mere.—Mr. C. F. Procter reports the season as normal. 27 Herons' nests were counted. Six pairs of Mute Swans reared 22 cygnets. Twelve pairs of Great-crested Grebes from the visible evidence only reared eleven young. Mallard, Pochard, and Tufted Duck were normal, although about June 19th the Mere rose 6 inches in a day and a

number of nests were flooded. Goldfinches, Bullfinches, and Long-tailed Tits all did well. Water-rails, one Landrail, and several pairs of Green Woodpeckers were noted about the preserved area.

Kilnsea and Spurn.—For notes on the Terns, Ringed Plovers, and Oyster-catchers, see the East Riding Report. The ban upon the removal of sand and shingle having been lifted, thousands of tons were carted away, which may expose some of our birds to dangers from the late June tides in 1940.

Bempton.—The birds had a comparatively quiet season, less climbing and collecting of eggs being done than for many years past. If, as is possible, no climbing is done next year, the needed relief may tend to arrest the decrease in numbers of Guillemots, and may help towards recovery.

The year has been unusually bad for oil. During one period of six weeks thousands of birds must have perished, when as many as 50 dead or dying birds could be seen along half a mile of shore, always Guillemots, Razorbills, and Kittiwakes, numerically in the order placed. Puffins did not appear to suffer. Early in the season salvage of a wrecked submarine involved blasting operations, which the Committee were able to have retarded until the middle of July in the interests of the breeding birds.

CONCHOLOGICAL SECTION

Report for 1939 (Mrs. E. M. Morehouse):—From the short note about the molluscan fauna around High Force, Teesdale, it will have been gathered there were very few species observed. This perhaps is not remarkable when the nature of the country is taken into consideration, although I made several excursions round the Hotel garden at various times. I never discovered any slime tracks or dead shells. I even asked our hostess if she had seen any; her remark was that she had never seen any or traces of any.

The Y.C.S. outing on June 3rd to Nostell Priory and Colliery Lake, there was one outstanding feature. To Mr. Thurgood's scoop came quite a good *Dreissensia polymorpha* Pallas. This was found in one of the Priory lakes in the writer's presence. In a small outlet from the lake *Paludestrina jenkensi* Smith. was taken in quantity. Later, in the Colliery Lake, etc., were some fine *Anodonta cygnæa* L. and *Limnæa stagnalis* L.; these were particularly large. Also *Limnæa auricularia* L., *Planorbis carinatus* Müll. and *P. spirorbis* L.

The Y.C.S. visited the route from Church Garforth to Kippax on July 1st. It was quite a productive day, being warm and showery, conditions being ideal for molluscs. The President, Mr. Don Fisher, Mr. and Mrs. Thurgood and the writer, who led the party, were those who attended. *Helix nemoralis* L. were abundant in the old green lane, as well as *Hygromia rufescens* Pennant. In a cow-pond leading off the lane *Pisidium personatum* Malm. was found. It was good to find *H. hortensis* Müll. v. *lilacina* Taylor still holding its own quite near the Kippax lime hills. This habitat has not been visited by the writer for eight years. The dominant mollusc here was *Theba cantiana* Montagu. In all twenty-seven species and varieties were observed.

Mr. Don Fisher says the most interesting feature of the season to him was the sharp definition in one area for the distribution of one species and another closely allied on the excursion to Garforth and Kippax. On one side of the Selby Road *H. nemoralis* L. was found, while on the Kippax side of the road *H. hortensis* Müll and *Theba cantiana* Montagu occurred, 'the road appearing to be almost a complete dividing

line.' These comments bear out one of my great problems. I have two habitats under observation, and have had for years ; I am no nearer a satisfactory solution. Apparently the soil contents, flora and everything are the same, yet the species is not to be found beyond a certain point, not just one season, but for quite ten years. It was particularly pleasing to receive this note, as the feature was not discussed on the excursion, for to me it was of long-standing interest.

Mr. and Mrs. Thurgood were able to find two old friends again at Malham Tarn. *Limnæa stagnalis* L. ; I believe it is the highest altitude for this species ; and also *Pisidium lilljiborji* Clessin. A. E. Stelfox recorded this mollusc for the first time in this habitat many years ago.

On July 6th Mr. and Mrs. Thurgood found *Cæcilioides acicula* Müll. in a small circular outcrop of limestone at Millington Dale, Pocklington, and *Vallonia pulchella* Müll. in the same vicinity. They also found *H. hortensis* v. *coalita* (12345) and *V. olivacea* Taylor in the Overton Lane, Skelton, near York, on July 8th. Mr. Sweetman, York, has forwarded a number of records for *Acanthinula aculeata* Müll, eleven in all for the last two years. They include Skipwith, Askham Bryan, Bishopthorpe, Stamford Bridge, Boston Spa, Brockett Hagg, Bossall Wood, Acaster, Selby, Millington Springs, and Hovingham Woods. For *Vitrea radiatula* Alder. he gives Brockett Hagg, Askham Bogs, Bishopthorpe, Sand Hutton gravel pits, Nova Scotia Plantation, Colton Hagg Covert, and the Hole of Horcum. Mr. Sweetman's note that this species was recorded for Askham Bog and Nova Scotia Wood thirty years ago is most interesting in these ever-changing times of the builders, etc., who break up what was once peaceful countryside. The records for *Punctum pygmaum* Drap. extend over the same period, the habitats being Acaster Malbis, Naburn Falls, Bishopthorpe, Healaugh-Bilbrough Road, Everingham Park, Bossall Wood, and Queen Mary's Dub.

From these records it appears as if on closer scrutiny and good sight, these small molluscs are more plentiful than has appeared heretofore.

Mr. Smith (York) writes his ' best records in the district are some fine *Anodonta cygnæa* L. I took in the lake at Scattingwell near Tadcaster ; the shells are of the form approaching v. *pallida* Jeffreys, varying from $5\frac{3}{4}$ in. to $6\frac{1}{2}$ in. long, more or less oblong and having very thin shells. *Vitrea pura* Alder. and *V. radiatula* Alder. occurred under stones at Hutton-le-Hole. The colony of *Arianta arbustorum* L. which occurred between Bishopthorpe and York has nearly become extinct, although the *H. nemoralis* L. occurred in enormous variety and abundance. *H. hortensis* Müll. were much scarcer than usual and more local.'

Mr. North, of Huddersfield, states his most notable captures have been made outside the county of Yorkshire.

Mr. E. Dearing comments on *H. hortensis*. He says it is still present in two stations in the Halifax parish, one at Elland and another at Copley. The Copley station, from which it was recorded many years ago was rediscovered by Mr. W. Ainley, of Elland, this year. In both places the snail is found in a patch of nettles. *Arianta arbustorum* is found at Elland, all specimens being dark and well marked. The following were taken at Driffild when the Yorkshire Naturalists' Union met there.

Ancylus fluviatilis Müll.

Acroloxus lacustris L.

Limnæa pereger Müll.

Physa fontinalis L.

Paludestrina jenkinsi Smith.

Pisidium nitidum Jenyns.

P. subtruncatum Malm.

On May 20th, while on a ramble around Loversall near Doncaster, a small plantation was investigated for its fauna and flora. The dominant mollusc being *Ena obscura* Drap. in all stages of growth.

ENTOMOLOGICAL SECTION

Neuroptera (E. G. Bayford, Barnsley):—*Sympetrum striolatum* Charp. A ♀ specimen was brought to me by a boy on September 1st. He told me he had taken it in Church Field, a large open space in the heart of the town. There were seven or eight of them together, other boys took odd ones, but let them go as they were afraid of being stung by them. I have never seen living specimens of this before. Porritt records it from Huddersfield and Askern. The nearest pond of any size will be fully a mile away.

(J. M. Brown):—*Æschna juncea* L., *Sympetrum striolatum* Charp., *Enallagma cyathigerum* Charp., and *Pyrrhosoma nymphula* Sulz. occur in the Robin Hood's Bay district.

Chrysopa carnea Steph. has again occurred in some numbers at Robin Hood's Bay during the winter in a state of hibernation. It was also taken by Mr. Cheetham on Austwick Moss during late October, 1938 (*The Naturalist*, 1939, p. 77).

No fresh species have been taken during the season, and though suitable localities have been explored for *Osmylus fulvicephalus* and for *Boreus hyemalis* in the Robin Hood's Bay district, so far success has not been obtained.

Orthoptera (J. M. Brown):—Mr. E. G. Bayford records the occurrence of *Acridium aegypticum* L. among bananas at Barnsley (*The Naturalist*, 1939, p. 38).

The following common Grasshoppers have been taken at Robin Hood's Bay:

Acrydium vittatum Zett. Plentiful at Howdale (probably all local records entered as *Tettix bipunctatus* L. should be transferred to this species); *Omocestus viridulus* L., *Myrmeleotettix maculatus* Thunb., and *Chorthippus bicolor* Charp., also at Howdale.

A list of Yorkshire Orthoptera is being prepared, and local records of even common species would be welcome.

Hemiptera (J. M. Brown):—Very little of interest can be noted for the past season. The recorder was unfortunately prevented from attending the field meetings of the Union, and Hemiptera do not seem to have been collected on those occasions. A certain amount of local collecting has been done, but no records of species new to the county have come to hand, and most species the recorder has collected have been common ones.

In small pools in the neighbourhood of Robin Hood's Bay the following species of Corixidae have been obtained:

Sigara lateralis Leach (*hieroglyphica* Duf.), *S. nigrolineata* Fieb., *S. sahlbergi* Fieb., and *Corixa punctata* Illig. (*geoffroyi* Leach), while *Micronecta poweri* D. and S. occurs in plenty in the backwaters of local streams. It should be noted that all local records given for *M. minutissima* L. should be referred to this species.

Teratocoris viridis D. and S. is recorded for Semmerdale (*The Naturalist* 1939, p. 53).

About Robin Hood's Bay also the following have occurred:

Capsus ater L. (at Thorpe), *Eupelix cuspidata* Fab. (at Howdale), *Cicadella viridis* L. (at Howdale), *Dikraneura mollicula* Boh. (plentiful on *Teucrium* in Ramsdale), *Limotettix nigricornis* Sahl. (plentiful in damp vegetation in Howdale).

Diptera (Chris. A. Cheetham):—The year has been a disappointing one for the dipterist, the early drought was a disaster to species which live in small ponds and marsh pools, and many were only seen in very small numbers. Species found last year could not be seen this, and common species only occurred sparingly. Some species were not affected,

as for instance the Tipulids on the moors and mentioned in the report of the Teesdale Meeting, and in August and September one of the less common Hoverflies, the large *Sericomyia borealis*, certainly seemed far more plentiful than it is normally.

Lepidoptera (E. Dearing) :—The present report incorporates records made by several observers as well as the South-west Yorkshire Entomological Society, the Leeds Co-operative Field Naturalists' Club, and the Rotherham Naturalists' Society.

Messrs. J. H. Flint, P. Stocks, and H. Walker, members of the Leeds Co-operative Field Naturalists' Club, have submitted full reports of which some details are given. Mr. Flint took a female specimen of *Zeuzera pyrina* (The Leopard) at Colton, near Leeds, and three specimens of *Argynnis aglaia* (Dark Green Fritillary) at Hook Moor, near Aberford, on August 8th.

Mr. Stocks made a large number of observations, including :
 Merveille du Jour (*Agriopsis aprilina*), East Rigton, September 15th.
 Feathered Gothic (*Tholera popularis*), North Leeds, at light, August 29th.
 Peach Blossom (*Thyatira batis*), Scarcroft, Leeds, at sugar, July 3rd.
 Lesser Satin (*Palimpestis duplaris*, dark form), Scarcroft, July 21st.
 Buff Arches (*Habrosyne derasa*), Hook Moor, July 15th.
 Tawny-barred Angle (*Semiothisa liturata*), Wyke, June 19th.
 May Highflyer (*Hydriomena impluviata*), Washburn, June 10th.
 Dingy Shell (*Euchæa obliterata*), Askham Bog, June 24th.
 Centre-barred Sallow (*Orthosia xerampelina*). Common in ash trees at Buckden, Upper Wharfedale, September 3rd to 12th.

Mr. Walker's notes include the Lesser Swallow Prominent (*Pheosia dictæoides*) on July 29th, the Lesser Satin (*Palimpestis duplaris*) on July 30th, and the Yellow Horned (*Polyploca flavicornis*) on March 5th at Scarcroft, near Leeds.

Immigrant butterflies have been noted during the season. *Pyrameis cardui* (Painted Lady) has been seen by several observers. This species has been 'more than usually common in the Huddersfield District'; 'common at Haugh Rigg, Pickering, on June 27th'; 'common on the cliffs at Scarborough on June 29th'; 'seen at Eccup on August 27th and October 1st'; 'some specimens at Elland during September'; 'fairly numerous in the Rotherham District (about eight seen)'; and 'at least three specimens at Halifax on September 18th and 24th.' Other immigrants have not been so common. *Vanessa io* (Peacock) has been noted : 'a single specimen, worn, taken from Buddleia at Edgerton, Huddersfield, by Mr. A. Taylor'; 'taken at Buckden, September 3rd to 12th, on Summit Plateau, Birks Fell, by Mr. P. Stocks'; 'hibernating at North Leeds on September 7th by Mr. J. R. Dibb'; 'Several imagines in the Elland District by Mr. R. Dearing'; 'Two *V. io* were frequent visitors to my garden in early July (W. E. L. Wattam)'; and 'not a single Peacock at Rotherham by Mr. W. L. Barringer.' *V. atalanta* (The Red Admiral) has been recorded from Huddersfield, Elland, and Rotherham. This species had only become numerous at Rotherham during late September and October.

V. urticae (Small Tortoiseshell) has been noted in several localities in its usual numbers. Mr. Wattam writes that neither the Small Copper nor the Small Heath have been very conspicuous in the Huddersfield district. Mr. Barringer has not seen the Small Copper, Common Blue, Meadow Brown, or Orange Tip at Rotherham this year. The White Butterflies have been unusually numerous late in August and September in the Elland, Huddersfield, and Rotherham districts. Mr. Wattam mentions the fact that he was able to kill 417 larvæ and some egg clusters of the Large White in his garden in September and early October. The Green-veined White (*Pieris napi*) attained unusual numbers at Elland

in August, and Mr. Wattam states that it was common in the Upper Reaches of the Holme and Chew Valleys at the same time.

Deilephila elpenor (The Elephant) has been noted from Huddersfield. Mr. Barnes states that some seven or eight larvæ taken at Dalton and Kirkheaton were not reared but are now preserved in the larval state at the Tolson Memorial Museum. Mr. Barnes also found a single specimen of *D. porcellus* (The Small Elephant) at Pickering on May 29th. Mr. J. Howcroft took a Small Elephant at Nostell, near Wakefield, in 1938. Mr. H. Spencer found a single underwing of *Acherontia atropos* (The Death's Head Hawk) near Tag Lock at Elland on October 20th. This specimen had apparently been attacked by either bats or mice.

Messrs. H. Spencer and W. Ainley join in a report for the Elland district. Notable captures have been imagines and larvæ of *Pheosia tremula* (The Swallow Prominent), *Notodonta dromedarius* (Iron Prominent), and *Lophopteryx camelina* (Coxcomb Prominent). Mr. Spencer had a further imago of the Coxcomb Prominent at Rishworth on June 10th. *Ennomos alniaria* (Canary-shouldered Thorn) and *Miana strigilis* (Marbled Minor) were taken at Elland on June 23rd, and the Blue-bordered Carpet (*Mesoleuca bicolorata*) occurred at Flockton on August 7th. Mr. Spencer informs the writer that Swallow Prominents were taken commonly by members of the Elland Naturalists' Society at Elland previous to 1914.

Four species of *Plusia* have been observed. The Gold Spot (*P. festucae*), the Beautiful Golden Y (*P. pulchrina*), and the Burnished Brass (*P. chrysitis*) are recorded from Elland, the last named including a larva feeding on peppermint. The Golden *Plusia* has been recorded from North Leeds, Elland, and Huddersfield. Mr. Wattam saw several type specimens of the Peppered Moth in Newsome Churchyard as well as a single variety doubledayria in Cloth Hall Street, Huddersfield. The Buff Tip and the Clouded Magpie are still present in Park Wood at Elland.

Visits by observers to Haugh Rigg, Pickering, checked the list obtained on the occasion of the visit by the Union last year and added the Small Heath (*C. pamphilus*), the Emperor (*S. pavonia*), and the Mother Shipton (*Euclidia mi*), as well as the above-mentioned record of the Small Elephant. The Green Hairstreak (*Callophrys rubi*) and the Pearl-bordered Fritillary (*Argynnis euphrosyne*) were taken at the top of Sutton Bank on May 29th.

Mr. W. H. Newport, writing from Halifax, notes Haworth's Minor (*Celena haworthii*) from Ogden Moor on October 14th. This record is interesting in that it confirms records made by the Halifax Scientific Society in 1897 and 1902 in which years it was taken at Widdop and on Ogden Moor in September. Mr. Newport had the Fox Moth, Northern Eggar, and Wood Tiger at Baildon Moor on June 8th.

Some mention was made by Mr. P. Stocks of the altitude at which he had taken some species. He found the Northern Spinach at 1,950 feet in Upper Wharfedale on August 8th, the Barred Straw at 1,750 feet on Buckden Pike on September 3rd, and the Small Autumnal Carpet on high moor barriers in Upper Wharfedale on September 3rd to 12th.

Mr. C. A. Cheetham states that the Small Pearl-bordered Fritillary (*Argynnis selene*) seems to be well settled on the Moss at Austwick, and that he has seen the Peacock on two or three occasions, very few Red Admirals, and only two or three Painted Ladies. He saw the Wall Brown (*Pararge megæra*) for the first time at Austwick.

A note was sent by Mr. W. Buckley, of the South-west Yorkshire Entomological Society, in which he mentions that not many outstanding records of Lepidoptera seem to have occurred during the past season. His note incorporates the capture by Mr. S. M. Jackson of *H. muricata* from Thorne Common, and *D. binaria* and *O. gonostigma* from near Selby.

In the Skelmanthorpe district the season has been below average. *H. leucophaæaria* was not as common as usual in the Bretton Hall and

Cannon Hall parks, but appeared quite common in Deffer Wood. Several varieties were taken, including var. *merularia*. *P. pedaria* was very scarce, only four specimens being noted.

Butterflies were later than usual. The first 'White' being noted as late as May 9th, and *V. urticae* on May 15th. A few *V. cardui* were seen during June and July, and *C. phlaeas* and *C. pamphilus* were as common as usual. An unusual abundance of the Large White occurred during the early part of September, but they had disappeared by the 17th. *P. rapae* and *P. napi* were unusually common. *V. atalanta* was first seen on October 16th, and in all three specimens were observed.

At Gunthwaite on May 27th *A. sylvata* was found in large numbers, including the following varieties: ab. *pantaria* not uncommon, var. *obscura* unusually numerous, var. *suffusa* three specimens, and var. *transversa* one specimen. This moth continued to frequent the locality until July 20th, on which date they were still about in small numbers. *P. moneta* continues to be common in the Skelmanthorpe area, and the 'Winter Moths' appeared on October 17th.

Mr. Bayford reports the following from the Barnsley district: *D. elpenor* alive on June 21st; *P. aegeria* seen on the banks of the Went, Brocodile, on May 6th; *C. phlaeas* is common at Barnsley and a specimen of *S. ocellatus* was seen near Knaresborough on June 16th.

Coleoptera (W. J. Fordham):—The year 1939 has been a good one for Coleoptera in Yorkshire, eleven new species being added to the list. Mr. E. G. Bayford adds *Nossidium pilosellum* Mon. from Brocodile, Wentbridge; Mr. J. H. Flint adds *Plerostichus angustatus* Duft. from Middleton, Leeds, *Heterocerus fuscus* Kils. from Cawood and *hiosoma oblongulum* Boh. from Armley, Leeds; and Mr. M. D. Barnes adds *Leptura 6-guttata* F. from Haugh Howe, Pickering, *Cryptocephalus moræi* L. and *Gymnetron linariae* Pz. from New Bridge, Pickering, *Psylliodes attenuata* Koch. from Spa Ghyll Woods, Ripon, *Allodactylus exiguus* Ol. from Grass Woods, Grassington, *Centronhynchus atomus* Boh. from Allerthorpe Common and Waterford Ghyll, Skipton, and *Phytobius velatus* Bc. from Stapleton Park, Wentbridge. Numerous species have been taken in additional localities and altogether a good list has been compiled, which will be published in *The Naturalist*.

BOTANICAL SECTION

(Chris. A. Cheetham):—Once again reports from correspondents show that the variable weather has had different effects in various parts of the county. Mr. Wattam speaks of a ruined haycrop, but in the Craven district, where hay-time is later, what at first seemed a hopeless crop due to the drought turned out later to be a very satisfactory feature of the year to our farmers. Again Mr. Wattam notes the Bilberry as having a very poor crop while the members who were on the excursion in Eskdale were struck by the abundance of fruit on this and on the Cowberry (Red Whortleberry). He also could find no fruit on the Cloud-berry in his district, but on Penyghent and Great Whenside there was a distinctly good crop.

The flower display was not very good and it appears that an early drought hurries the plants into fruit and consequently we do not see so many in flower at the same time. Some, however, made little flower at the normal time and then had a second flowering much later. Mr. Wattam mentions this for the Bilberry and I noted it particularly in the Rock Roses and some species which flowered freely in the after-growth of the hayfields.

Some striking shows of fruits have been widely noted, the Ash and the Rowan being in the forefront. The Blackberry crop has been excellent and the same may be said of the Roses. We shall have sufficient Hollyberries for everyone, and the Oaks are full of acorns.

The Hazel crop of nuts has not been good, and I could hardly find any Cranberries, this being possibly due to the spring drought.

This year the Oak and the Ash came into leaf nearly together. I have never noted them so close previously. The secondary growth was not much in evidence this year, and the autumn tints are very fine.

(Edward R. Cross) :—In the Scarborough district, Strawberries were a failure, due to the very long dry period in the spring. Plums also proved a failure ; other fruits, especially apples, were an abundant crop.

The hedges covered with the fruits of the Hawthorn, called cat-haws, here were a remarkable sight.

Dr. S. P. Rowlands and the writer rediscovered the Hay Scented Fern, *Dryopteris æmula* Kuntze, at Hackness.

This fern was reported to be most abundant fifty years ago, but had not been seen since. Some twenty specimens were seen in fine condition, and since the Doctor's visit others have been found.

The May Lily Wood has now been cut down and the undergrowth burnt. Great care has been taken not to destroy the plant, which again did not bloom this year.

HUDDERSFIELD DISTRICT (W. E. L. Wattam) :—The weather conditions of January, February, and March were of an extreme nature. April gave promise of a normal spring, but with the exception of a glorious spell of sunshine throughout the Easter recess and one of a similar character during the Whitsuntide recess in late May, the weather conditions in our area were most disappointing. One of the remarkable features has been the persistency of wind from the East and North-east, frequently of gale force. June throughout was dull and cold with abundant rainfall and frequent strong winds. On June 21st (longest day) I had to make a business journey to Gatley in Cheshire by motor. On the return journey the summit of Holme Moss was reached at 9 p.m., the journey downwards to the village of Holme being made through a dense fog, limiting visibility to three yards. The weather conditions naturally had their effect upon the maturing of wild fruits. Most trees gave a wondrous display of blossom, but the harsh weather conditions prevented the beauty of such display being prolonged. July gave only intermittent glimpses of what is naturally expected in that month, but the greater part of August and September was distinctly enjoyable. The hay crop was practically ruined, much being burnt on the ground, and what was stored is in a great measure of poor quality. Despite the weather vagaries the display of wild blossom has been very gratifying, and quite up to standard. The moorlands, particularly from the close of August to mid-September, in particular where ericaceous plants dominated, gave to memory most pleasing pictures for retention. Mention might be made of the beauty of the wealth of blossom displayed by *Narthecium ossifragum* at the base of Chew Valley in the early part of August.

SUMMARY OF FRUITAGE CROPS.

Pear. Quite good.

Apple (cultivated). Excellent. Wild Crab. Excellent.

Broad-leaved Elm. Moderate. The harsh weather conditions militated against the maturing of most of the fruit.

Sycamore. Quite an excellent flowering display, but here again the weather conditions reduced the fruitage yield to quite moderate dimensions. Indeed, upon no tree have I seen anything but a scattered crop.

Ash. Excellent.

Birch. Moderate. Abundant flowers but fertilised catkins were destroyed by the weather conditions.

Elder. Quite good but not so strongly prominent as during the previous four years.

Beech. Meagre.

Horse Chestnut. Gave an excellent flower display but the fruitage yield is only moderate.

Oak. *Quercus sessiliflora*. Very good. *Q. pendunculata*. Very good. *Q. cerris*. Moderate. *Q. Ilex*. Very good.

Wild Service. Excellent.

Mountain Ash. Once again a magnificent spectacle.

Hawthorn. Very good taken as a whole, but no tree gives a heavy crop.

Hazel. Poor.

Alder. Moderate.

Bramble. Excellent.

Bilberry. I have tramped a very large acreage of our local moorlands where this plant is most abundant, but the results registered were very poor for fruits. Indeed in Mid-August a second blossoming period was a most conspicuous feature of this plant.

Black Crowberry. Very poor.

Cloudberry. The Greenfield Moors (Chew Valley area) is our best locality. I spent the greater part of August Bank holiday tramping over acres of this plant and only succeeded in finding two fruits. Several plants displayed blossoms. The water bailiff told me that three weeks previous to my visit he had been desirous of sending fruits to a friend in the South and had only succeeded in finding four fruits. One would have thought that the good weather conditions at the latter part of May would have enabled the plants to have set their fruits.

Lime. Very good.

Wild Roses (*arvensis* and *canina*). Very good.

Holly. Moderate.

Wild Cherry. Gave a magnificent display of bloom, but the fruitage yield is only moderate.

Walnut. Very good.

SHIPLEY DISTRICT (A. Malins Smith):—Flowering in spring was early and remained so until a little after Whitsuntide. The wet months which followed caused the later flowering species to open later than usual. Such species as Devil's Bit Scabious, Burnet Saxifrage, and Water-mint were exceptionally late in opening. It was a poor year for orchids here. One field, which showed 15 to 20 Butterfly Orchids in 1938 and about 100 Spotted Orchids (*Fuchsii*), this year showed none of the former and only one of the latter, and this instance is typical of the general state of orchid flowering in the district. The Ash flowered exceptionally well and enabled me to compare the flowering of certain trees with the observations I made in the heavy-flowering year 1934. These observations confirmed the former conclusions, as no tree that I formerly observed to be male produced keys. All the trees with crops of keys this year were female or hermaphrodite in 1934. The Honeysuckle flowered exceptionally well.

Nineteen thirty-nine may be put down as a good year for fruiting in general. Both cultivated and wild fruits have on the whole been abundant. Nevertheless, in this district the fruiting has not been uniformly good and some species have cropped badly. A more detailed account would note the abundance of acorns and ash keys, two species which rarely both fruit well in the same year. The Rowan had exceptionally heavy crops and the Rose Hips gave a good display, as did the Blackberries. The flowering of Honeysuckle was exceptionally profuse and an unusually fine display of fruits followed. This species rarely fruits more than sparsely in this district and this year's display is therefore all the more notable. Species with good, but not exceptionally heavy crops include the Elder, the Hawthorn, the Raspberry, and the Woody Nightshade. Moderate crops occurred on the Sycamore, Horse Chestnut, Guelder Rose, Black Bryony, and Bilberry. In spite of the good crops of cultivated apples, our crab apples have been very variable,

with a great many barren trees, but a few with quite good crops. Among the species with poor crops must be included the Holly, the Hazel (which never fruits well here), the Maple, and the Alder. This last is a remarkable exception to its usual behaviour, for I do not think I have reported anything but good crops on this tree until this year. Of species with no fruit at all there were the Beech, the Sloe, and the Cranberry. The Lime and the Hornbeam are so scarce in the district that the few trees scarcely give a proper picture of the fruiting of the species. So far as they go the Lime was good and the Hornbeam barren. Our single locality for Tutsan has shown a fair number of berries.

Secondary growth was pretty common on most kinds of trees.

PICKERING DISTRICT (E. G. Highfield) :—All trees have been very luxuriant this year, foliage has been very heavy and in many trees secondary growth of twig has occurred. Blossom and fruit have been abundant.

The early spring flowers made a great display, but there were a few exceptions, Blue Bells were poor, Fly Orchid was almost missing, Frog and Butterfly Orchids were very poor specimens. Since all these plants make their food storage in the early spring it is probable that they were suffering from the bad effects of the acute spring drought of 1938. The Burnt Tip Orchid which seemed to have vanished from this district, made its re-appearance in several places. The Bee Orchids looked as if they were going to be a very good crop in May, but they were completely burnt out by the hot sun during Whit Week and nothing was left of them except blackened remains. The later flowering Orchids, Spotted, Fragrant, Marsh, and Helleborines, were nearly a month later than usual in getting into bloom, but eventually they flowered very freely. In one situation the *Epipactis palustris* is spreading rapidly and there are hundreds of seedling plants.

The later Marsh Flowers, Bog Asphodel, Marsh Gentian, and grass of Parnassus, did well in all their situations.

Botanical Records Committee (W. A. Sledge) :—The outstanding event of the year, indeed for many years, has been the discovery of the Lizard Orchid (*Himantoglossum hircinum* (L.) Koch) in the Pickering district. This formed the subject of a separate article to *The Naturalist* (Dec., pp. 309-310). Only a single plant was found, but it is to be hoped that the species will reappear and gain a permanent footing in the county. Mr. G. A. Shaw's rediscovery of *Carex capillaris* L. in Gordale is another noteworthy record. It had not been seen in this locality by any living botanist though search has often been made for it. Other new or notable records may best be referred to under the Riding concerned.

NORTH YORKS.—No new records were made during the Union's visit to Teesdale, but one of the outstanding botanical impressions carried away from this meeting was of the sheets of *Arctostaphylos Uva-ursi* (L.) Spreng. in full flower on Cronkley Scars. A visit to Semmerwater with Mr. J. P. Utley revealed *Carex Oederi* Retz. var. *elatio* Anders., a species new to V.C. 65 on which a note has already appeared in *The Naturalist* (p. 213). A hybrid between this and *Carex flava* L. was also gathered, while other interesting plants observed were *Callitriche intermedia* Hoffm. var. *pedunculata* (DC.), *Polygonum viviparum* L., *Eleocharis acicularis* (L.) Br., and *Orchis latifolia* × *purpurella*. In August, Miss Rob showed me *Rumex maritimus* at Sutton Howgrave (V.C. 65) and at Dalton near Thirsk (V.C. 62) and in the latter station, many hybrids with *R. conglomeratus* Murr. were seen. By the same pond at Sutton Howgrave was a colony of Willow Herbs growing among abundance of *Epilobium hirsutum* L. and *E. parviflorum* Schreb. which were clearly hybrids between these two species. Miss Rob has also found *E. roseum* × *montanum* at Catton and on the Union's excursion to Castleton she found *Myosotis brevifolia* Salmon in two localities. This species, previously

unrecorded for North-east Yorks, is now on record for both vice-counties of the North Riding and from Mid-west Yorks.

WEST YORKS.—The Y.N.U. excursion to Wentbridge in May yielded *Viola calcarea* (Bab.) Greg., *Dipsacus pilosus* L., and *Vinca minor* L., the first being new to V.C. 63. From the same woods a bush of *Daphne Mezereum* L. was reported to me earlier in the year, but in view of the many introduced shrubs and trees about the drives, further information is required before its status there can be assessed. An excursion to Great Whernside and Meugher in early July yielded *Myosotis brevifolia* Salmon at the Great Wham, and *Carex rigida* Good. was seen about the gritty summit ridge of Great Whernside both in V.C. 64 and 65. Mr. Malins Smith records *Anthemis tinctoria* L. (as a casual presumably) from Collingham and *Myosotis repens* G. and D. Don from Shipley Glen and Birch Close Farm, Bingley. *Trientalis europæa* L. he reports as still growing sparingly in its long-known station at Soil (or Swill) Hill between Bradford and Halifax, its most southerly British locality.

EAST YORKS.—An account has already appeared in the pages of *The Naturalist* of the botanical results of the Union's excursion to Driffield. It was unfortunate that the deplorable weather conditions prevented the thorough examination of a very attractive area. The most interesting species observed were *Cirsium dissectum* (L.) Hill, *Schœnus nigricans* L., and *Carex diandra* Schrank, together with some forms or hybrids of the last named which deserve further investigation. Mr. A. K. Wilson records *Carex divisa* Huds., from Easington, *Sagina ciliata* Fr. from Houghton Woods, *Euphrasia nemorosa* Lœnnr. var. *collina* Pugsley (det. Pugsley) from Newbald Springs, *Paris quadrifolia* L. from Waudby Wood and *Smyrniolum Olusatrum* L. from Catwick (? native) together with the following aliens, *Claytonia perfoliata* Donn., *Potentilla norvegica* L., *Cirsium setosum* (Willd.) MB., and *Polypogon monspeliense* (L.) Desf. from Brough, *Lactuca macrophylla* A. Gray from North Cave and *Aconitum anglicum* Stapf. from between Waudby and Ripplingham (coll. H. J. Davis).

Ecology (D. Hilary) :—Members of the Committee have been present at all the general meetings of the Union and reports in the ecology of the districts visited have appeared in the general reports of the excursions. An excursion for the examination of the Moughton plots, arranged for September 16th, had to be cancelled owing to the difficulties of transport, but news of ecological work quietly going on comes from various parts of the county.

During the August meeting at Castleton the finding of juniper in Baysdale proved an interesting addition to our knowledge of the degeneration of juniper on Moughton and an account of this, written by our Chairman, Mr. Malins Smith, appeared in *The Naturalist* for November.

Mr. Flintoff's work on the distribution of *Cornus suecica* in the Hole of Horcum, the results of which were summarised in last year's report, is still going on, as is also the research into the ecology of Fungi which is being carried out by some of the Huddersfield members.

Bryology (F. E. Milsom) :—1939 has been a year of quiet progress in bryology. Apart from Teesdale, none of the places selected for the past year were very productive of results. A lot of work was, however, done in Teesdale, though it was disappointing that more old records were not confirmed, in particular *Tetraplodon Wormskjoldii*.

There has been a good deal of ecological or distributional work in connection with which special reference may be made to the papers on the Peat Pits of Austwick Moss, and on the Moss Flora of Boulders.

The distribution of *Orthodontium gracile* var. *heterocarpum* in the county is still being steadily investigated. It may be noted that no

trace of this moss was seen on the Teesdale excursion, in spite of an abundance of apparently suitable habitats.

It is gratifying to note that a fourth station for *Tortula cernua* has been discovered near Micklegate (V.C. 64). It was growing on the same type of lime refuse as in its other stations, and like them in company with *Leptobryum pyriforme*.

Mycology (Miss J. Grainger) :—What would have been a very well-attended meeting at Gilling West was marred by the outbreak of war, but there were sufficient members present to form a quorum, and the officers and Committee were re-elected *en bloc* in order to ensure continuity.

During the year Mr. T. Petch has published in *The Naturalist* his critical study of 'Xylaria.' He has also published, in *The Transactions of the British Mycological Society*, a further paper on 'Entomogenous Fungi.'

Mr. A. A. Pearson was to have given us his paper on 'New Diagnostic Characters in Agarics' at the Foray, but he was unable to attend. We hope to hear the results of his studies on some future occasion.

Dr. Grainger read his Chairman's address on 'Ecology of the Larger Fungi' at the Gilling meeting. The studies are being continued with special reference to the Huddersfield district.

A mycological herbarium has been established at the Tolson Memorial Museum, Huddersfield. Material from the collections of the late H. T. Soppitt, from Mr. W. G. Bramley, from various recent Yorkshire Fungus Forays, and from Professor Dr. H. Poeverlein, of Augsburg, are all included.

Records over a small area in the Meltham district are being continued in relation to periodicity.

Other members are continuing their studies, but specific details are not to hand at the moment.

NEW RECORDS

NEW TO COUNTY

<i>Phyllachora dactylidis</i> Del.	<i>Panæolus acuminatus</i> Fr.
<i>Tilletia separata</i> Kunze.	<i>Boletus radicans</i> .
<i>Amanitopsis nivalis</i> (Grev.) Rea.	

NEW TO V.C. 61

<i>Peronospora trifoliorum</i> de Bary.	<i>Puccinia Zopfii</i> Wint.
<i>Podosphæra oxyacanthæ</i> (DC.) de Bary.	<i>P. festuæ</i> Plowr.
<i>Erysiphe graminis</i> DC.	<i>P. anthoxanthina</i> Bubak.
<i>Uromyces acetosæ</i> Schroet.	<i>P. arrhenatheri</i> Erikss.
<i>U. limonii</i> Lév.	<i>Bolbitius fragilis</i> (Linn.) Fr.
<i>U. junci</i> Tul.	<i>Thecaphora hyalina</i> , 1922 and 1936.

NEW TO V.C. 62

<i>Lophodermium juniperinum</i> de Not.	<i>Puccinia amirabilissima</i> Peck (1938).
<i>Gymnosporangium juniperi</i> Link.	<i>Rosellinia ligniaria</i> (Gres.) Nits. (October 1936).
<i>Puccinia bromina</i> Erikss.	<i>Eriosphæria inæqualis</i> Grove.
<i>P. triseti</i> Erikss.	

NEW TO V.C. 64

<i>Peronospora alsinearum</i> Casp. on <i>Spergula arvense</i> .	<i>Diaporthe strumella</i> (Fr.) (Fckl.) on Ribes.
<i>Nectria magnusiana</i> Rehm. L.	<i>D. eres</i> Nits. on <i>Corylus</i> and <i>Æsculus</i> .
<i>Sordaria humaria</i> (Fckl.) Auersw.	<i>Peroneutype heterocanthæ</i> (Sacc.) Berk and V.C. 65.
<i>Hypocopora equorum</i> (Fckl.) Wint.	<i>Tubaria anthracophila</i> Karst.
<i>Sphærulina alni</i> A. L. Smith.	<i>Chrysomyxa empetri</i> Schroet.

<i>Cortinarius</i> (Phleg.) <i>napus</i> (Fr.) Cke.	<i>Clitocybe infundibuliformis</i> (Schæff.) Fr.
<i>Helotium claro-flavum</i> Berk.	<i>Stropharia merdaria</i> Fr.
<i>Physarum cinereum</i> Pers.	

INCOME.

EXPENDITURE.

Naturalist—

BALANCE SHEET, November 6, 1939.

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ASSETS.

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JOHN R. DIBB.			

The *Entomologist* for November contains 'Further observations on *Acherontia atropos*,' by L. G. Hulls; '*Choreutis punctosa* Haworth a good species,' by F. N. Pierce; 'British lepidoptera collecting, 1938,' by C. G. M. de Worms, and numerous notes and observations.

In the *Quarterly Journal of the Geological Society*, Volume XCV, Mr. R. G. Carruthers has an interesting paper on 'Northern Glacial Drifts: Some Peculiarities and their Significance.' After reviewing the evidence very carefully, he makes the bold assertion: 'Faced with so much new evidence one cannot avoid the conviction that in Northern England, while the glaciation had many changes of direction, the melt once begun, was continuous to the end. There were no interglacial periods, or even "episodes." In such matters, all these years, we have been beating the air, struggling with bogeys that never existed. The facts so patiently collected can never lose their value. But they were incomplete, and over their interpretation we must cut our losses and start again.' With this the present writer, at any rate, thoroughly agrees.—T.S.

In Memoriam

PERCY H. GRIMSHAW

1869—1939

DURING 1939 death has taken heavy toll of our list of Vice-Presidents. In the passing of Percy H. Grimshaw we sustained our fifth loss during the year and by his death we lose not only a Past President, but also one who worked hard for the Union from 1887 to 1892 as Librarian and Assistant Secretary. His removal to Edinburgh to take up a post in the Natural History Department of the Royal Scottish Museum was a great loss to our Union. Fortunately, he frequently returned to Yorkshire for holidays, and kept up his study of the Diptera of the county and was able to write the list of Yorkshire Diptera for the first volume of the *Victoria History of the County of York* (1907). He ultimately became Keeper of the Natural History Department and retired in 1935, having been in the Museum for 42 years. He was a Fellow of the Entomological Society of London, of the Royal Society of Edinburgh, and of the Royal Physical Society of Edinburgh, and in 1933 he was made a Companion of the Imperial Service Order. While in Scotland he investigated the parasites of the red deer and the destructive heather beetle, and suggested methods of control which are still adopted.

Many members of our Union owe much to him for his help and suggestions in the study of our two-winged flies and the printed record of his Presidential Address in *The Naturalist* of 1925 is most helpful to anyone wishful to know more of this group of insects.

C. A. C.

FIELD MOUSE

T. SHEPPARD

FOR many years we have had a case in this museum in the room devoted to East Yorkshire mammals labelled 'Field Mouse.' There is no animal inside, although there is one of the nests. Dozens of people have seen it from time to time and drawn attention to the fact that there is no specimen, and many have promised to send one to complete the collection. None has done so. I have appealed to all likely Yorkshire naturalists, and even advertised for a specimen, but so far without result. Is it possible any of your readers can oblige us with one, or a couple, please? Is it possible that this species is becoming very rare, if not extinct, as I can well remember, as a boy, each year getting quite a little collection of these globular nests as the corn was cut on a farm I used to frequent?

The Naturalist

YORKSHIRE BIRDS

R. C.

As a contribution towards an attempt to throw light upon the question of the countries of origin of birds wintering in Yorkshire, or passing through on the migration movements, Mr. Alfred Hazelwood (until recently of Doncaster) has generously offered to receive and to make skins from any birds found dead in Yorkshire, by members of the Y.N.U. or others, if they are sent to him with data of date and place found. Mr. Hazelwood says in his experience such birds are often species out of their own ground, presumably on passage, and is therefore hopeful that needed information may thereby become available. Any and every species will be welcome excepting House-Sparrow—even a Song-thrush may prove on examination to be of the continental race. Mr. Hazelwood is prepared to deposit the skins annually at any place designated by the Vertebrate Section of the Y.N.U. and to report periodically. His address is 54 Somerset Road, Bolton, Lancs. It is hoped that Y.N.U. members will use this means of helping Yorkshire Ornithology by prompt despatch of specimens found while they are still in a fresh state.

THE ADVANCEMENT OF SCIENCE

AFTER a century during which the British Association for the Advancement of Science has issued its wonderful and valuable Annual Reports on various branches of science, it has this year altered not only the method of publication, but the size, so that the many people who treasure these publications, will have to start a new shelf with more height! In place of the Annual Report, a quarterly series now appears under the title of *The Advancement of Science*, which measures $9\frac{3}{4}$ in. by $6\frac{3}{4}$ in. The First Part for the year 1939-40, October, 1939 (New Quarterly Series, No. 1), besides the President's Address, contains the contributions to the Sections relating to Anthropology, Zoology, and Botany, and there is a supplement of 51 pages dealing with a Scientific Survey of Dundee and District, which was handed to the visitors at the meeting. The publication is issued at 5/-.

FIELD NOTE

Drift Filled Channel beneath Guiseley Gap.—A boring put down for water at the works of Cotopa Ltd., Back Lane, Guiseley, at about 475 ft. above O.D., has revealed a thickness 154 ft. of glacial deposits. Other borings and sections in the neighbourhood have illustrated the great thickness of drift, pointing to the existence of a drift-filled channel of considerable extent beneath the Guiseley Gap. The present boring

showed 146 ft. of sandy boulder clay, resting on 8 ft. of coarse, false bedded sand, with small crushed pebbles, usually of local grits. This bed was underlain by 8 in. of hard blue-grey boulder clay, which rested on the eroded surface of the solid grit. No rocks but local Carboniferous were present, grits and limestones being predominant.—H. V. DUNNINGTON.

HULL MUSEUM

CORRECTION OF DUSKY SHEARWATER TO SOOTY SHEARWATER
MR. H. F. WITHERBY recently asked me to examine two birds in the Hull Museum labelled 'Dusky Shearwater,' and by the kindness of Mr. T. Sheppard, Mr. C. W. Mason and I have been able to do so. The appearance of these dark birds at once established the fact that they are much too large to belong to any form of *Puffinus assimilis*, to which the term 'Dusky' was once applied. Bill measurement, etc., confirmed our opinion that they should be labelled 'Sooty Shearwater' (*Puffinus griseus*) of which there is a further example in the Museum for comparison. Mr. Sheppard is having the corrections made on the cases and in the catalogue; and is taking also the opportunity to bring up to date the nomenclature hitherto applied to the bird labelled 'Levantine Shearwater,' altering such to 'Western Mediterranean Shearwater' (*Puffinus P. mauritanicus*) to which form all the British-taken examples of *P.P. yelkouan* (as they were formerly considered) appear to belong. Those who have a copy of the Guide to the Birds in the Hull Museum are requested by Mr. Sheppard to make their own corrections accordingly on page 65.—RALPH CHISLETT.

NEWS FROM THE MAGAZINES

The Entomologist's Record for November contains 'New Amatidæ from Asia,' by H. Bytinski-Salz (with plate); 'List of Trypetidæ (Diptera) taken in North Kent,' by H. W. Andrews; 'Names of Microlepidoptera,' by T. B. Fletcher; 'Some Hemiptera of Easton,' by T. F. Marriner; 'Collecting Notes'; 'Current Notes'; and supplement, 'The British Noctuæ and their Varieties,' by H. J. Turner.

In *Man* for December 1939, Mr. T. Sheppard has a note on the meaning of the Cowrie Shell, a subject which has been discussed in the pages of that journal. He points out that certain species of Cowries, at present only found in the Red Sea, occur with Anglo-Saxon necklaces in Yorkshire, and a list of similar occurrences is given. Quite apart from the question of transport in those early times, it is stated that, 'The cowrie was (and still is) widely believed to confer fertility on women, and to help in the process of parturition. Cowries are worn by women as amulets, presented to them in many places as bridal offerings, and used by sterile and pregnant women to attain the respective benefits. In addition, they have been placed in graves with the object of conferring vitalising power and to ensure the continuance of the deceased's existence, i.e. not merely life but resurrection. The association of cowrie-shells with pregnancy is found as far away as India and Japan.'

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The NATURALIST

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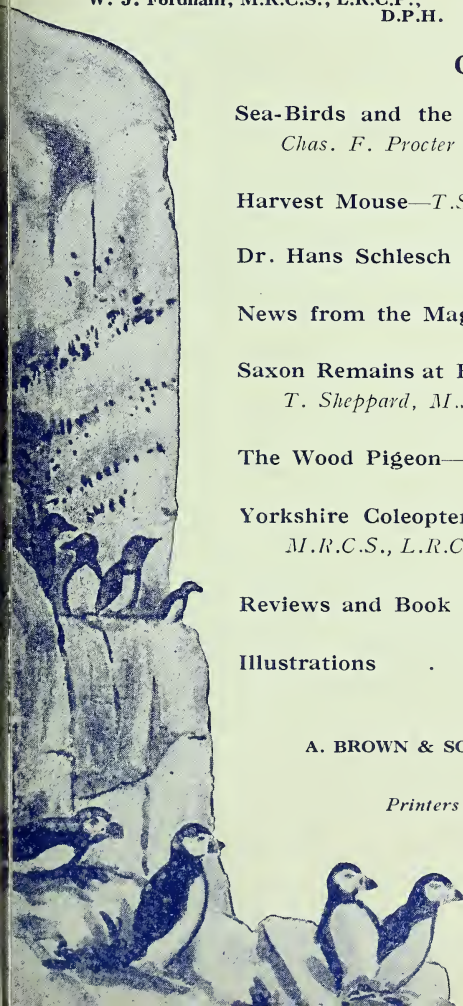
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VERTEBRATE SECTION

President of the Section: E. WILFRED TAYLOR.

TWO MEETINGS will be held in the Library of the Church Institute, Albion Place, Leeds, on Saturday, February 10th, 1940 at 3 p.m. and 5-15 p.m. It is hoped that members will attend to join in a general discussion.

The following papers will be read:—

'Bird Watching with Still and Cine Camera' (illustrated by W. W. Nicholas, Esq.).

'Some Yorkshire Breeding Birds' (illustrated by A. Gilpin, Esq.).

It is proposed, in order to minimize the difficulties of the present conditions that the meeting should terminate at about 8 p.m.

Members and associates are cordially invited to attend, and bring notes, specimens and lantern slides. Will Officers of Affiliated Societies kindly notify their members.

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SEA - BIRDS AND THE OIL PROBLEM

CHAS. F. PROCTER AND C. W. MASON

YORKSHIRE has recently borne pathetic evidence of the results of oil pollution. During late April, May, and early June, the coast from Redcar down to Spurn was littered with victims. As many as 70 were found dead and dying in a radius of a mile. This has been reported at several points. Occasionally, the trouble is not so bad as it used to be, but every now and



then an experience like this comes along. These sporadic happenings have provoked a good deal of thought and inspire the following conclusions after assessing the common features. Oil tankers constantly pass South from the Forth, Tyne, Weir, Tees, and the Humber. Sometimes as many as seven can be seen going back empty, outside territorial waters. There are many times this number from the Northern Continental ports.

The engineers are responsible for keeping the bilges clean, the tank residues cleared, and the ships sealing free from oil. They may think that to do this a little at a time, at intervals of 10 miles, is harmless, but if a succession of such ships along the same lane of sea do this one after another, hundreds of small pools of oil are left. The crucial factor is now a sustained wind from any quarter between North and East. This washes the oil pools together. Whenever the wind drift is Westward, it is only a question of how long it prevails and how far it has to go as to whether this oil is disastrous or not. If it reaches the feeding grounds of the Guillemots, Razorbills,

and Kittiwakes it is deadly dangerous. These birds are looking for sile, which makes its appearance known by producing an oily appearance on the sea. The birds' intelligence is their undoing. They mistake this for sile and plunge into it, only to find their mackintosh of closely laid waterproof feathers (more resembling fur) now broken and matted, leaving gaps into which the salt water percolates to the pervious underdown. Tough as they are, they are helpless when waterlogged. Their wing primaries are prevented from functioning and they come to a miserable end. The essential factors are, heavy oil remainders discharged into the sea, a long sustained wind over two or three weeks, with the North-East coast as a lee shore and the rest is automatic. Mr. A. E. Nightingale and the writers recently found, within 50 yards radius of a point just above the North landing at Flamborough, 1 Kittiwake, 9 Razorbills, and 33 Guillemots, all dead. Even the noble Gannet did not escape and the fact that Mr. Mason found one in an area where they are counted by singles is significant. This was following a period when as many as 230 different birds had been counted in half an hour's walk. By all the rules of the game, Puffins should suffer like the rest, but they do not. They are not so gregarious as Guillemots and Razorbills, nor do they travel so far to sea, and that may be the explanation.

The fuel consuming boats may be worse offenders than the tankers. The fuel tanks accumulate what is called 'bottoms,' or 'foots,' these being the impurities and thickenings which form in crude oil. This is no use in a burner and an engineer who is careful takes more than ordinary pains to get rid of it. The position is difficult. Its solution may lay in the provision of suitable separating machinery, which will be economically necessary wherever fuel oil is handled. In the meantime, bird lovers should keep this before them. This is an international question, and tankers should be compelled to show a clean bill at the ports of sailing, since no country can exercise jurisdiction outside territorial waters. Persistent exposure and application may eventually dispose of it. The accompanying photograph speaks for itself.

HARVEST MOUSE

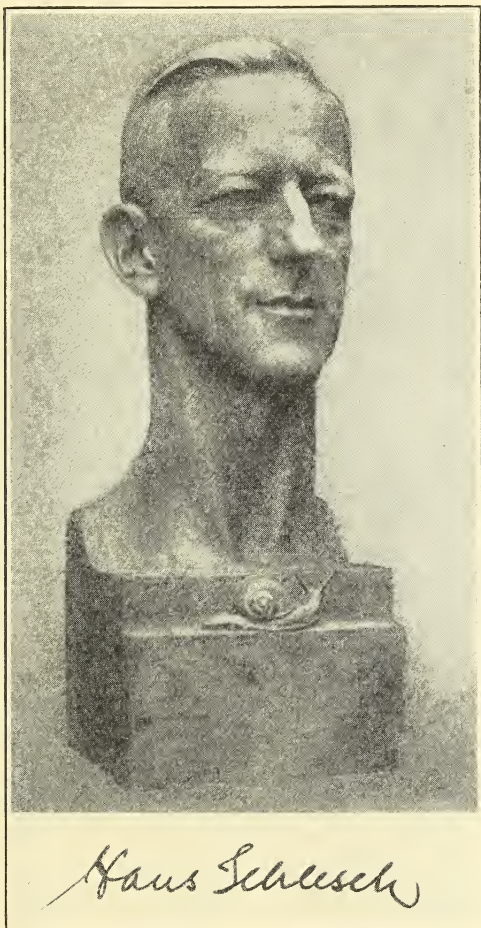
My note on the Field Mouse in *The Naturalist*, for January, p.30, should refer to the Harvest Mouse (*Mycomys minutus*).—T.S.

NEWS FROM THE MAGAZINES

In Volume 18 of the *Transactions of the Newcomen Society*, Dr. J. A. Smythe has some notes on Ancient and Roman Tin and its Alloys with Lead. He has carefully examined the various tin ingots found in South-West England, some of which are of enormous size, and possibly of Roman date, and these ingots are remarkable for their purity, some containing as much as 99.9 per cent. of pure tin.

DR. HANS SCHLESCH

So long ago as 1905 Hans Schlesch was in correspondence with the late W. Dennison Roebuck and J. W. Taylor on matters molluscan. In 1911 he contributed the first of very



many articles on Conchology to *The Naturalist*, when the present writer first became acquainted with him, and rarely a month has elapsed without correspondence ever since. In 1912 Hans Schlesch left Copenhagen for Iceland, and then sent his already extensive collections of land, fresh-water and marine mollusca to the Hull Museum, where it could be and frequently has been consulted by British zoologists.

While in Iceland, Schlesch investigated the recent and Crag Fauna of the Island, where he spent many years, and acted as British Vice-Consul, being a British subject, having been born in Madras.

On his return to Denmark in 1922, he began his intensive studies of the Molluscan Fauna of the Baltic area, especially on the coast between Schleswig and Finland. His contributions to science, recorded in *The Naturalist* and other scientific journals, refer to his researches in France, England, Iceland, Norway, Estonia, Latvia, Germany, and Hungary. During these years he amassed collections, each specimen being carefully named, localised, and dated. Later his researches, hitherto devoted to Arctic and Palæoarctic Mollusca, extended to Paraguay, Nigeria, Abyssinia, Aden, Persia, India, Amur, and other localities. In this way tens of thousands of species, including a large variety of monstrosities and deformities, were eventually forwarded to Hull, and arranged in cabinets along the Natural History Galleries in the Albion Street Museum. Many species new to science were figured and described by Schlesch, and many others have been named after him by other zoologists.

His work is now widely known and has been appreciated by his election as Honorary Member of the Yorkshire Conchological Society, and by similar societies in Malta, California, Riga, Estonia, and Chicago, the University at the last place awarding him the Honorary Degree of Doctor of Science. By a deed of gift, arranged by the Town Clerk of Hull and Dr. Schlesch's Trustees, the whole of his collection now in Copenhagen, as well as his particularly valuable and complete library of works dealing with conchology and malacology, are to come to Hull, where Dr. Schlesch has spent his holidays in arranging and classifying the collection already there.

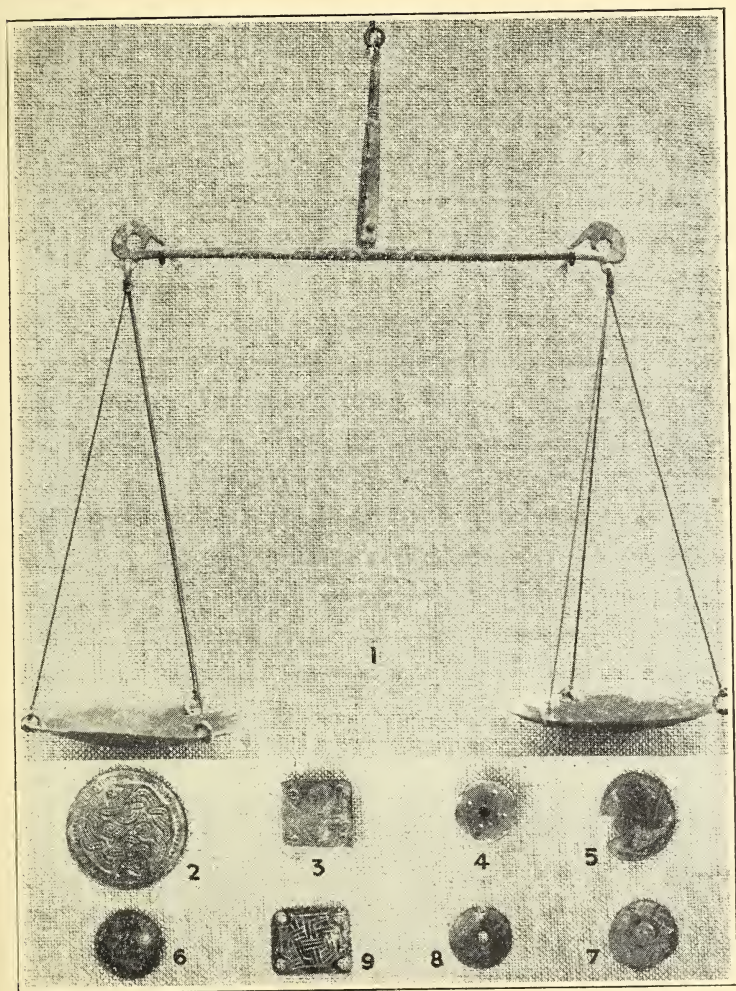
As a further tribute to his work, Mr. Jacob Breguø, the well-known sculptor, of Copenhagen, (who already has several of his works in the Danish National Gallery, etc.), has completed a fine bronze bust of Hans Schlesch, which the artist considers one of his best achievements. This bust reproduced herewith has been presented to the Hull Corporation by the artist and other admirers of Dr. Schlesch, and presides over the Gallery containing the Schlesch Collections.—T.S.

The Entomologist's Monthly Magazine for December contains 'Larvæ of British beetles, I. A key to the genera and most of the species of British Cerambycid larvæ,' by F. van Emden (with figs.); 'A new *Phyllophaga* (Col. Scarabæidæ) from the Cayman Islands, B.W.I. (Results of the Oxford University Biological Expedition to the Cayman Islands, 1938),' by M. W. Sanderson; 'Concerning the names of two British Water Beetles,' by F. Balfour-Browne; 'Note on the record of *Chrysopilus nubecula* Fln. (Dipt.) as a British species,' by J. E. Collin, and several shorter notes.

SAXON REMAINS AT BARTON

PART II

SINCE the objects found during the excavations at Barton



previously described¹ were obtained, the trench has been widened, and on this occasion we were permitted to be present before the work started, and consequently were able to obtain full information as to the precise relationship of the finds to

¹ *The Naturalist*, Oct., pp. 257-262, and Nov., pp. 281-283, 1939.

the skeletons. In all, remains of five skeletons have been found, to three of which reference has already been made, and the other two were in a very fragmentary state and nothing has been found in association with them.

Some of the finds recently made were obtained from the same burials as those already described, and we are now in a position to give more details of the objects buried with each individual.

In one instance, where a bronze cylindrical workbox and beads threaded on a bronze bracelet, obviously of feminine interest, occurred, was a very fine short sword, which ordinarily would have been associated with a male skeleton. It is of an unusual pattern, and for some reason had been buried with this female. A similar example of different objects found with one skeleton occurs in Baldwin Brown's *Arts of Early England*,¹ where he states :

'In the case both of Sarre and Gilton the weights and scales were found in the grave of a warrior with full panoply,' and it was suggested that 'the occupant had laid by the implements of his early vocation (that of arms) and followed a more peaceful and humanising profession. It might, on the other hand, be surmised that he kept his arms about him to guard his stock-in-trade as a money changer !'

With the first skeleton with which was associated a hanging bowl and a cylindrical workbox with lid, already described, other objects have now been obtained. These include a set of scales and weights which, notwithstanding their fragile condition, were in a perfect state of preservation, and had obviously been enclosed in a wood box or other similar receptacle when buried. There are also the remains of a bone comb, a large decorated bronze handle which ordinarily might have been mistaken for a bronze coffin fitting, and a heavy curved piece of bronze of about the same dimensions.

The scales (Fig. 1) are perhaps the most interesting of the many finds made at Barton. There are two plain pans, slightly concave, each $2\frac{1}{8}$ in. in diameter, and each perforated for three circular bronze rings, all of which are intact, to which the cords for suspension would be attached. The balance-beam is of circular bronze wire, 5 in. long, with zoomorphic terminals, which are a characteristic feature in Anglo-Saxon decoration, though they do not seem previously to have been recorded on balance-beams. Beneath each terminal is a loop containing a small bronze ring, similar to those in the pans. From the centre are two upright pieces of bronze, flat for the lower half, and circular in section above, and decorated with circular lines, and 2 in. in length. The two halves are held

¹ Volume IV, p. 418.

together by a bronze rivet, and at the top is another small bronze ring for suspension. Swinging between these two halves is a pointer of bronze, 1 in. in length, which is hidden behind the uprights when the weight and the object weighed are equal.

The weights found associated with these scales consisted of a large circular decorated weight (Fig. 2), $1\frac{3}{16}$ in. in diameter, apparently cast in bronze, one face being elaborately decorated with interlaced work within a border of raised dots. On the edge of this piece are four incised lines, suggesting the value of the weight, whatever that may be. In the Driffield group of Saxon burials, Mortimer records what he describes as a 'circular brooch or bulla of white metal (Fig. 810). It is very thin, and is ornamented with embossed lines of curious design.' This is very similar to the Barton weight.

The next (Fig. 3) in size is a square weight, $\frac{7}{10}$ in. at the sides, and $\frac{1}{8}$ in. thick. On one side are slight depressions at right angles, forming a crude cross, and an incised dot at each corner. There is a very small dot at one side of this face, and on the reverse three others forming a line diagonally from one corner to the other.

The next (Fig. 4) is a circular weight, $\frac{2}{5}$ in. in diameter, $\frac{1}{5}$ in. thick, and perforated through the centre. The edge is perfectly plain and on one side are four equidistant pitted dots, and a similar number, though smaller, on the reverse. Dr. J. A. Smythe, of the Armstrong College, Newcastle upon Tyne, has kindly examined this and reports: 'This is a speculum metal. It is very hard and takes a fine polish and shows the micro-structure of such an alloy. The structure is not uniform throughout, and I have observed the same thing with samples of Roman speculum metal. The specific gravity is 8.89 and this records well with the value given for the alloy with 67 per cent. of copper and 33 per cent. of tin, viz., 8.91.

The next in weight (Fig. 5) is an oval piece, $\frac{9}{10}$ in. by $\frac{7}{10}$ in. This seems to be the remains of a Roman coin, which has been much worn, and in order to make it an exact weight, an m-shaped piece has been cleanly cut from one side.

Fig. 6 is a bronze Roman coin, $\frac{2}{5}$ in. in diameter, and at the top left-hand corner of the alter is a single perforated dot which may be an indication of its weight. I submitted these two Roman weights to Mr. J. W. E. Pearce, of London, who writes: 'The smaller coin is of Constantine II as Cæsar. It reads on the obverse DN CONSTANTINO NN NC, and on the reverse BEATA TRANQVILLITAS. Altar inscribed VOTIS XX. Mm illegible. The coin is of LUGDUNUM. The larger coin is most likely to be fairly early—perhaps Trajanic.'

Fig. 7 is a very thin piece of bronze, plain, except for a

circular depression in the centre which shows on each face, rather resembling the appearance of an ordinary button which has been flattened out. This is $\frac{7}{10}$ in. in diameter.

Fig. 8 is a perfectly plain disc of silver, $\frac{3}{8}$ in. in diameter, with a circular hole through the centre, and a small v-shaped piece apparently cut out of the edge, which, however, may be accidental. On one edge of this are seven notches, as though indicating its weight.

A further object found with this little collection, but which may or may not be a weight, is an oblong disc of bronze (Fig. 9) with a large circular hole at each corner, the upper surface being decorated by interlaced lines, the reverse being plain. It measures $\frac{4}{5}$ in. by $\frac{7}{10}$ in. This does not seem to be a weight in the ordinary way, but, with the largest decorated weight, seems to resemble the bronze-gilt mounts from Caenby, Lincolnshire, illustrated in the *British Museum Guide to the Anglo-Saxon Antiquities*.¹ These two pieces are attributed to the end of the sixth century, and it is suggested that they are from Central Europe, and a very similar pair of decorated pieces occurred on the Lullingstone bowl.

On submitting this collection of scales and weights to Mr. R. L. S. Mitford, of the British Museum, he writes :

‘ So far as I have been able to discover, as a result of some recent work on Viking and Saxon balances and weights, these are the first marked Saxon weights to be found outside the confines of Kent, and the balance itself is only the sixth example of a Saxon balance-beam that I have been able to find, the other five coming from Kent and Berkshire, though I think fragments of scale-pans have been found elsewhere (as the Broomfield, Essex, burial). Yours is a perfectly orthodox Saxon type of balance, but distinguished from the other extant examples by the animal heads on the ends of the beam ; I have only seen a drawing of the balance that was found at Gilton, Kent, Grave 66,² but this seems to have had some kind of upstanding motive on the ends of the beam, and another parallel in this respect is a beam found recently by Mr. G. T. H. Neely at Ronaldsway in the Isle of Man, which has animals’ heads standing up on the end of the beam ; this balance is, I think, of native Celtic product. An account of it is to appear in *The Antiquaries Journal*.

‘ I assume that the large flat circular piece of bronze decorated on one side (Fig. 2) is a weight. It appears to have four cuts on the edge, which suggest that it represents four smaller units of weight. There is a fifth mark, but this

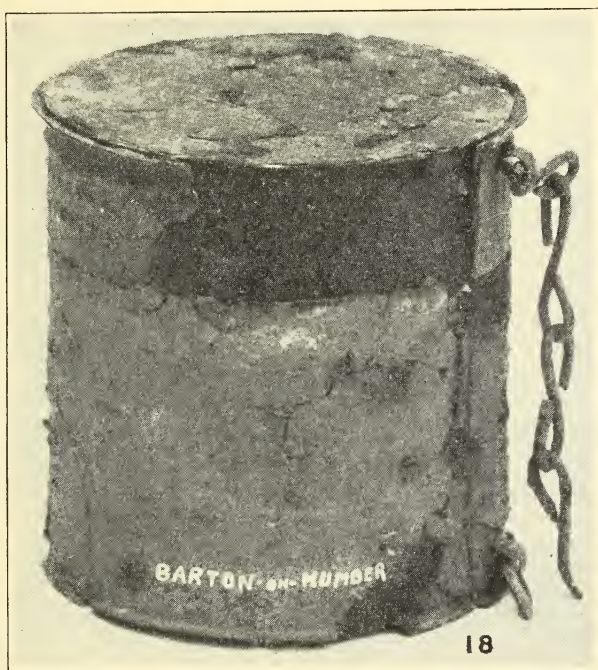
¹ 1923, p. 87.

² Bryan Fausset, *Inventorium Sepulchrale*, 1856, p. 22 and Pl. 17, 1, 2, and 3.

does not seem to be as definite as the others and may be accidental.

' I am not sure about the other marked weights, but suggest that the square one is marked seven, and the round one five.

' The flat oval bronze disc with a piece removed from one edge may be merely clipped, but the mark might perhaps be interpreted as two nicks.



' I weighed them all approximately with the following result :

	<i>Weight Value.</i>
Large circular decorated weight (? four cuts). Fig. 2	200.4 grains
Square weight with ? seven dots (ignoring a small dot on the four-dot face). Fig. 3	184.2 grains
Circular weight (? five dots). Fig. 4	130.2 grains
Oval weight with ? two nicks. Fig. 5	95.9 grains
Thin disc with central hole. Fig. 8	11.05 grains
Thin disc with central depression. Fig. 7	8.7 grains
Roman coin. Fig. 6	39.9 grains
Square decorated plate with four holes (perhaps not a weight). Fig. 9	30.55 grains

' My idea was to see whether these weights, being the first Saxon-marked weights found outside Kent, agreed with the Saxon weight system deduced by Reginald Smith from the Kentish-marked weights, but I am afraid I cannot make anything at all convincing out of them. The largest weight marked with four cuts gives a unit of 51.25 grains (I have made no allowance in this for dirt and oxidisation, so that the original weight as in use would be slightly less), which is not far off Reginald Smith's Saxon unit of 48 grains which is a duodecimal division of the Troy ounce of 576 grains.¹ The oval weight with ? two nicks, if these really are meant for two nicks, would also give a unit of c.50 grains, and the two other weights with five and seven dots, as I have interpreted them, give units of approximately half this value (26 and 27 grains). I am not sufficiently sure that all these marks on the weights are indications of value—the small circular weight which I suggested had five marks might be a perforated weight with only four marks, etc.—and on the whole I think, unless you are prepared to go into the whole subject in some detail, that one can only publish the weights with weight values and detailed descriptions of all the marks, pending the appearance of confirmatory evidence from new finds.'

As Mr. Mitford's estimation of the weights was given before they were carefully cleaned, the pieces have since kindly been accurately weighed by Mr. Coltman, the head of the Hull Corporation Weights and Measures Department. There are naturally slight variations between the two series, so we have given the weights as ascertained by Mr. Coltman.

Illustrations of both the Gilton Down, Kent, Collection (Fig. 10) and the Ozingell Collection (Fig. 11) appear in *Money, Scales and Weights*, by J. F. Musham and myself, pages 10 and 11, and from these it will be seen that many of the characters on the weights from Barton also occur in these two series.

As showing the continuity of this type of money scales, without any apparent change, in the book just referred to are several illustrations of different periods in which the scales are practically identical with those of Saxon date found at Barton. One of these, of Flemish origin, is evidently of early seventeenth century date, as one of the weights is dated 1612. The illustration is reproduced herewith, Fig. 12. Others of comparatively recent date are similar in construction.

The bone comb (Fig. 13) is evidently a fragment and would originally be 3 or 4 in. long, similar to Saxon bone combs from Sancton and other places, figured in Mortimer's *Forty Years Researches*, and now in the Mortimer Museum at Hull.

¹ See his paper in *The Antiquaries Journal*, III, 122 et seq.

The Barton piece is 2 in. in length and the long slender bone teeth, thirteen to the inch, occur on each side, the two pieces of bone being held together by iron rivets, one of which still remains in position.

With this also was a small silver piece (Fig. 14) evidently a part of a buckle, with two perforations for attachment to leather or other material. Upon this I have the following report from Dr. J. A. Smythe: 'This is an alloy of silver and copper, very rich in silver. Owing to the nature of the specimen it was not possible to make an entirely satisfactory micro-section, but from the appearance I judge that the silver-content is of the order 90-96 p.c.'

The bronze handle (Fig. 15) seems to be unique among Saxon finds, and hitherto I have not been able to find anything like it, and the British Museum authorities know of no parallel. The terminals, which are worn, are bent down in the form of a swan's neck; the centre, where it thickens, is divided into eight zones by incised perpendicular lines. The greatest width is $5\frac{1}{2}$ in., and it is over $\frac{1}{2}$ in. deep in the centre. It has evidently been cast, as indicated by the small bubbles which still remain, and the back of it is perfectly flat, though rough.

With regard to this specimen, Mr. E. T. Leeds, of Oxford, writes:

'Roach Smith figures a very close parallel on Plate XVI, Fig. 4. I am not certain of the grave, but believe it to come also from Kingston 205. No scale is given, but it is, I believe, about one-quarter and that would fit a bowl $13\frac{1}{2}$ in. diameter, $4\frac{1}{2}$ in. high from Kingston Down 205, which is not otherwise figured. The bowl should be at Liverpool with the rest of the Meyer Collection. Nothing is said of cast handles of this type; it would be interesting to see if that point could be checked. As figured, it clearly must be cast, like yours. I have also come across what appears to be a very close parallel to the Kingston Down, 205 bowl handle, with the same curious angles. It is figured in W. Veeck *Die Alamannen in Württemberg*, Plate 20, B5, and comes from Wendlingen, Württemberg, from a man's grave with umbo, two spears and buckle. I cannot decide from the tiny figures whether either of these handles are cast with flat back or in the round.'

With No. 15 was a curious piece of bronze of about the same size (Fig. 16) forming the segment of a circle, $\frac{2}{5}$ in. wide and fairly thick, and projecting from this at a distance of $3\frac{1}{4}$ in. apart are two triangular foot-like pieces suggesting that it may be part of a stand for receiving a bronze bowl or other object of that character. In reference to this, Mr. E. T. Leeds writes:

'The imperfect piece is the half of a trivet such as has been more than once found accompanying a bronze-handled

bowl. These trivets are known from Kent in such association. Roach Smith figures three in *Inventorium Sepulchrale*, the published version of Bryan Faussett's Kentish Excavation in the eighteenth century. Two come from Gilton, but both have round feet, cupped on the underside. An absolute parallel for yours comes from Kingston Down, Grave 205, figured on p. 78.'

There is also what is apparently a child's bracelet in two parts made of thick bronze wire (Fig. 17). Each section is just over 2 in. in length and probably a similar piece is missing which would make the bracelet, if such it is, about 2 in. in diameter.

With the second body was a bronze workbox (Fig. 18) with lid, and chain attached, similar to that found with the first skeleton described. This box is rather wider than the previous example. It has a total height, including the lid, of $2\frac{1}{4}$ in., though as originally the lid may have overlapped the base, the box would be slightly less in height. The box is splayed at the bottom to receive a bronze base, which is missing, although most of the flat top of the lid is present, and the lid again is splayed to receive the disc, which is more or less flat, $2\frac{1}{4}$ in. in diameter, and both lid and sides are decorated with dots punctured from the inside, though different in pattern from the specimen already described. The box has eleven rows of these dots, and the lid three, and there are ten raised dots to the inch. The decoration on the lid seems similar, with concentric circles, but there are one or two lines in the centre indicating a possible wheel-like structure.

Attached to the top of the lid is a small bronze loop, and at the base of the box a similar one, and between the two is a chain made of s-shaped links of bronze wire, each $\frac{3}{4}$ in. in length.

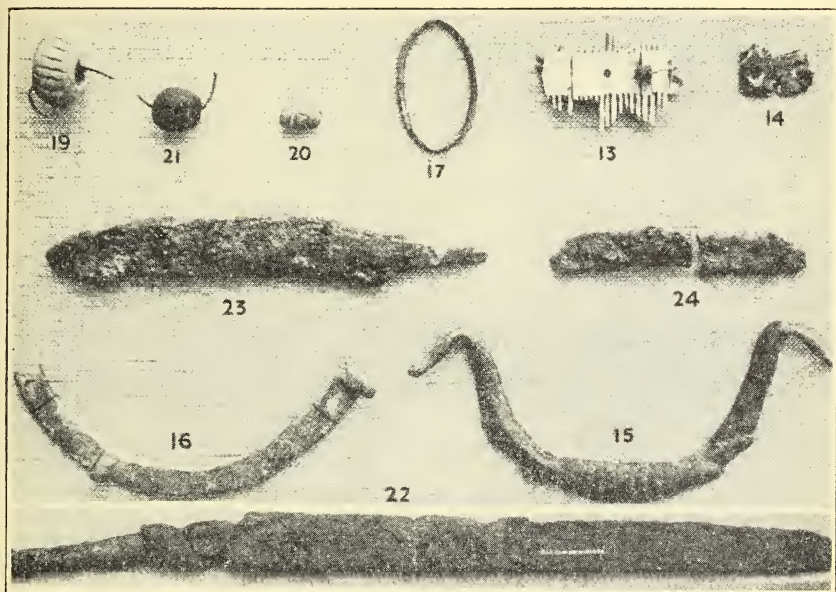
In association with the box were other s-shaped links of smaller size, to which may have been attached iron objects, in fact on two of the links are pieces of iron rust indicating that small articles were attached to them. On one link, which is fastened to a piece of bronze are two flat triangular hanging pieces resembling the decoration to some of the Saxon pins found in East Yorkshire.

These thread boxes normally occur in Saxon graves of latish date, see the last chapter in E. T. Leeds' *Early Saxon Art and Archæology*.

On a ring made of bronze wire, twisted in two or three places, found at the wrist, were three beads. The larger one (Fig. 19) of light blue enamel earthenware is a typical melon bead, nearly 1 in. in diameter, with a large central hole, $\frac{3}{10}$ in. wide, which is cut straight through. Fig. 20 is a small oval bead of olive green glass, decorated with yellow stripes,

after the Phœnician style, and is $\frac{1}{2}$ in. long by $\frac{1}{4}$ in., and has a clearly-cut perforation. Fig. 21 is a roughly globular bead of amber, over $\frac{1}{2}$ in. long and equally as broad, with a well-cut hole through the centre. This is the only amber piece so far found at Barton, and is reminiscent of the scores of beads found with necklaces at Staxton, near Scarborough.¹

Inside the workbox was a mass of dark peat-like material which under the microscope distinctly shows a texture of



leather, and there is also a small piece of cloth which shows the structure of the very fine weaving, and also loose threads of the hemp-like material. This partly owes its preservation to the fact that it was buried in the bronze box, and partly to a quantity of oxide of copper with which it is impregnated.

With this second body was found a remarkable sword (Fig. 22) which is different from any of the scores of Saxon implements already in the Mortimer Collection; in fact it bears an extraordinary resemblance to the Iron Age sword found at Eastburn two years ago.² It is just over 18 in. in

¹ See *The Naturalist*, January, April and June 1938, and *Hull Museum Publication*, No. 195.

² Figured on Plate IV of 'Excavations at Eastburn' in *The Yorkshire Archæological Journal*, Part 133, 1938, and *Hull Museum Publication*, No. 197.

length, and the top is hammered into a tang, round which some material would be wrapped to form the handle, traces of which, indeed, adhere to the iron oxide. The end of this tang is turned over at right angles, evidently better to attach the handle. The average width of the sword is $1\frac{1}{2}$ in. ; it appears to be two-edged, and therefore is quite distinct from the scramasax which is usually associated with these burials. Actually it seems more to resemble a two-edged carving knife, and consequently may not be an implement of war, but was for domestic use. The blade is thickest in the middle, though there is no trace of a ridge. A precisely similar sword to this appears in Fig. 175 of Du Challu's *Viking Age*. It was found at Kannikegaard. The tang for the handle is also hammered over at the point in order to make a better hold for the grip.

With the third body were the remains of two small knives (Figs. 23 and 24) or saxes of the usual type, each single edged, with a flat back, and a tang for fastening to the handle, in this way roughly resembling an ordinary Sheffield pocket-knife blade. One, which is practically complete though rather corroded, is $5\frac{3}{4}$ in. in length by $\frac{3}{4}$ in. in greatest width ; the smaller one, not complete, would probably be 4 in. in length, of which about $3\frac{1}{2}$ in. remain.

It is remarkable that no trace of pottery, of any description, has occurred in this Barton cemetery.

P.S.—An excellent account of the early bronze bowls and the various forms of decoration attached, appears in an article on 'British Hanging Bowls' by T. D. Kendrick, in *Antiquity* for June 1932. In this Mr. Kendrick states :

'I believe that the hanging-bowls are from first to last British, and that the Saxons had no hand whatever in their manufacture. I think, moreover, that in origin these bowls are really Romano-British ; that many of them had been made and were in use before the Romans left this country ; that others were made after the Romans had gone, and belong to the almost unknown archæology of the Arthurian period.'

From this it appears that there are two series of bowls, one with three escutcheons and hooks for hanging, and another, very similar in general appearance, but which has no provision for hanging, but in this latter case the bowls were evidently placed on a circular trivet. The occurrence therefore, at Barton, of a bowl with three escutcheons for hanging, and at the same time the remains of a trivet with two feet, and also a large handle with swan head-like ends, suggests that there was probably another bowl at Barton, which we have not been successful in finding. The handle is remarkably like one found at Kingston, Kent, now in the Meyer Collection of the

Museum at Liverpool. In this case the trivet was found with this particular bowl.¹

Mr. Kendrick also describes an escutcheon for a hanging bowl from Utne, in Norway, which he says was 'no doubt stolen from this country.' He also illustrates a bowl from Skomrok, Norway, now in the Oslo Museum, which, from its general appearance and the nature of its escutcheons, might be looked upon as one of a pair with the Barton example, previously described.²

THE WOOD PIGEON

T. HYDE-PARKER

YET another bird whose numbers, combined, in this case, with its diet and appetite, give rise to grave concern among agriculturists, is my old friend of boyhood's days, the 'Cushie Doo.'

This, the Wood Pigeon, is also known as the Ring Dove, owing to the apparent ring caused by a patch of white (in the adult bird) on each side of the neck. It may also be distinguished by a conspicuous white bar on the wings, which, by the way, seems to disappear in a miraculous manner when the bird alights.

The largest of our *Columbidae* (measuring as it does, roughly, 17 in. overall and weighing up to 1½ lb.) it is common—sadly too common, many will say—all over England and Scotland, though in the latter country, such would not appear to have been always the case. In the East Lothian district, for instance, where these birds are now so abundant that, in some 8½ years, 130,440 were killed under the auspices of the local Agricultural Society with no perceptible diminution of the nuisance, it is not so very long since there were people still living who could recollect its first appearance there.

Few birds are better known to the country-dweller. One can hardly enter the smallest spinney—certainly not in the breeding season—without hearing that characteristic crooning note which has been likened to the farmer's wife's advice to her good man, 'Tak two coos, David,' followed probably by a clattering of wings as the bird takes its hasty departure; while, when family duties are over, huge flocks are to be seen in the arable fields where, from their movements and manner of feeding, they are sometimes regarded as weather prophets.

The cooing of the Wood Pigeon is one of the first decisive signs of approaching spring, and breeding may commence as

¹ See Fig. 8B, p. 174 of Mr. Kendrick's paper.

² See *The Naturalist*, October 1939.

early as March. The nest, though sometimes placed in an overgrown hedge, and occasionally even in ivy, is usually in a tree, and at times quite a good way up. Indeed, while I have often examined lowly-placed nests, the only time I remember climbing a tree of any size since arriving at years of what should be discretion was when, at the instigation of a niece, then passing through the egg-collecting stage, I 'shinned up' a tall spruce to get her a Wood Pigeon's egg. The nest itself is familiar to every country child, being a flimsy-looking platform of twigs, so slight that it is sometimes possible to see through it and detect, from beneath, the two elongated white eggs. It must, however, be more skilfully constructed than one would suppose, otherwise the first gale would shake it down or blow it bodily away. Both birds take part in incubation, a fact not the easiest of confirmation as there is no perceptible difference between the sexes, and, with so shy a bird, one is seldom lucky enough to see them change places. The incubation period is 16-17 days, the young when hatched being fed by regurgitation on that half-digested, curd-like substance which used to be known as 'pigeon's milk.'

During the greater part of the year the Wood Pigeon is a wild, stand-offish sort of bird,

'Through lofty groves the Cushat roves
The path of man to shun it,'

and when feeding in the open he is even more wary. In the nesting season, however, this species, like the Mistle Thrush, seems at times to lose to some extent that instinctive dislike for the proximity of man, and will sometimes build quite close to human habitation. Strangely enough, London parks give one, perhaps, as favourable an opportunity as any for intimate study, and I also remember noticing how tame they were in the Luxembourg Gardens in Paris. They do not, by the way, take kindly to domestication, even the young often turning wild after the first moult. Certainly the late A. H. Patterson relates an instance of one which, taken as a squab, lived in a cage for nineteen years, but this was an exceptional case.

Despite the smallness of the family, occasional inroads on the eggs by Jays, and on the young by Sparrow Hawks (the latter being even credited with watching the young birds until judged fit to kill!), our own Wood Pigeons increase considerably each season, for there may be several broods, and there is no time between March and September when one may not come across young birds. Also, of course, the large increase may be accounted for by the absence in these days, owing to the activities of keepers, of most of their natural

enemies. As if this were not enough, however, great numbers of immigrants arrive on our East Coast every year, usually about November. Of these, some at any rate remain to breed here, and the proportion seems likely to be larger as the growing afforestation schemes afford more and more nesting places.

They would appear to be very hardy birds, and, though an epidemic of a Diphtheric nature was reported some years ago—whereby some 2,000 were found dead in Morayshire Woods within a month—there seldom seems to be any undue mortality even in the severest weather, and when food must be hard to find.

With the question of diet we broach a subject which, I fear, can no longer be regarded as even controversial. The contention that the Wood Pigeon does as much good as harm is certainly renewed from time to time, but alas! only sentimentalists and those imperfectly acquainted with the birds' feeding habits will now attempt to defend it. Certainly large quantities of weed seeds are consumed, including those of such noxious plants as dock, twitch (*Agropyrum repens*), charlock, ragwort, bindweed, etc., and a certain, though very small, percentage of animal food. Furthermore, as concerns grain, and taking an average over the twelve months, a considerable proportion is, of course, gathered from stubble fields; but nothing can extenuate the damage caused by raids on root-crops, beans, rape, clover, etc. Nor does he confine his attentions to the open—though there he has literally a wider field. Where there is a quiet kitchen garden, he can do a lot of harm, and a friend of mine, who extends hospitality to several pairs in his grounds, recently lost every single early cabbage. To 'get down to brass tacks,' the results of Dr. W. E. Collings's painstaking and extensive researches—over 400 birds having been examined—show that, of the total food, 62 per cent. meant injury to agriculture, 36·5 per cent. was of a neutral nature, and only 1·5 per cent. beneficial.

In addition, of course, to the nature of the food, must be considered the quantity eaten, both as regards the vast number of birds and also their huge individual appetites. No one can have shot them, in the evening at any rate, without being amazed at the bulk of the crop—which, by the way, it is as well to empty before hanging the birds up. A keeper at Ormesby in Norfolk shot one in whose crop he counted 282 large peas, while another disclosed a solid, hard-pressed mass of clover heads which, when shaken loose, nearly filled a quart measure. 800 grains of corn, 180 beech nuts, and 60 acorns were found in the crops of three individuals, and in one case a crop examined actually contained 1,296 corn seeds! In some cases, indeed, the crop is so crammed as to burst

when the shot bird falls to the ground. Canon Atkinson relates an instance where one struck on a spur of rock, when he noted 'a springing jet of brilliant scarlet objects sparkling upwards from its place of fall.' Going to pick the bird up, he found more than half-a-pint of holly berries strewn all round it. I have frequently found the crop stuffed full of turnip tops, though I never had recourse to the device mentioned in White's *Selborne*, where someone carefully washed such a collection and then boiled them as a vegetable—presumably to accompany the roast pigeon!

After all this, it may perhaps seem trivial to mention the fact that they are very thirsty creatures—fortunately this does not affect the mere human standpoint—and take frequent deep draughts of water, drinking like cattle, and not sipping like the average bird.

As to dealing with the problem of reducing the numbers of so wary and keen-sighted a bird, the most effective way seems to be by organised shoots such as have been for some years customary in many rural districts; for, unless some such concerted and synchronised method is adopted, the first shot simply drives the roosting birds off to another covert. Needless to say, whether watching near a favourite drinking place or feeding ground, or waiting at the nightly roost, a shelter or hide of some sort is essential, and to avoid the necessity of showing oneself, it is useful to have a dog to retrieve; though, by the way, some dogs do not care to carry this form of 'game'—will not, in fact, pick them up—possibly owing to the quantity of easily detached and particularly fluffy feathers. In the open, besides a hide, decoys are of great assistance. A stuffed bird is often utilised, or even one just shot can be propped up, care being taken in either case to point its head to wind. The late Sir R. Payne-Gallwey, in his *Letters to Young Shooters*, describes 'a deadly and sporting method of killing wood pigeons' by means of live decoys. Aided by this device, three young sportsmen accounted for 300 in one day, over 1,000 in one week, and 3,000 in a month. Very large bags have been made in more recent years, and this without any apparent diminution in the numbers.

But all these points are, of course, well known to every sportsman. In any case, detailed information has been given in a leaflet published by the Ministry of Agriculture, and there is also a very useful pamphlet issued by the I.C.I.

It is consoling to realise that, if wholesale thinning of these excessive flocks is essential in the interests of agriculture, at least the victims need not be wasted. Not only is a wood pigeon—especially when young—quite good eating, whether roast or stewed, but there is generally a market for clean shot birds, even though the price offered may not be very high.

YORKSHIRE COLEOPTERA IN 1939

W. J. FORDHAM, M.R.C.S., L.R.C.P., D.P.H.

THE year 1939 has been a good one for Coleoptera in Yorkshire. Eleven species new to the County List have been added during the year. The beetles taken have been captured by fewer collectors than usual, their names being :

M.D.B.	M. D. Barnes, Huddersfield.
E.G.B.	E. G. Bayford, Barnsley.
J.H.F.	J. H. Flint, Leeds.
W.D.H.	W. D. Hincks, Leeds.
R.R.U.K.	R. R. U. Kaufmann, Goathland.
T.S.	T. Stainforth, Hull.
G.B.W.	G. B. Walsh, Scarborough.

Little has been published during the year, but attention should be drawn to 'The Aquatic Coleoptera of the Environs of Panal Ash near Harrogate, Part II,' by R. R. U. Kaufmann (*Entomologists' Monthly Magazine*, 1939, p. 102) and 'Pyropterus affinis Pk. and its Larva,' by E. G. Bayford (*Entomologists' Monthly Magazine*, 1939, p. 164, *The Naturalist* 1939, p. 197).

A list of Coleoptera taken on the Yorkshire Naturalists' Union Meeting at Wentbridge will be found in *The Naturalist*, p. 219.

A very fine Dynastid was brought alive to Mr. E. G. Bayford on July 12th in Barnsley. It had been imported with bananas.

Following is a list of the new species and a list of additional records for species already in the list. The number of the Vice-county is given after the name of the locality. The asterisk denotes a species new to the Vice-county indicated.

The eleven species new to the County List are :

Pterostichus angustatus Duft. Middleton, Leeds (64), 27/7/39, 30/9/39 (eleven specimens), (J.H.F.), on a fairly steep slope covered with wiry grass, oaks and birches. Under small loose stones on patches of bare ground. Usually singly, in three cases two under one stone. A rare beetle first taken in the spring of 1916 by Messrs. W. E. Sharp, Tomlin, and others, on burnt ground at Crowthorne, Berks., and since taken in other places in the south of England. May possibly require bare ground.

Nossidium pilosellum Mm. In rotting birch brought from Brocodale, Wentbridge (63), 6/5/39 (E.G.B.). Not previously taken so far north. Occurs in Ireland. Found in damp rotten wood, fungi and dead leaves. Rare, but locally abundant.

Heterocerus fuscus Kies. Cawood (64), in flight, 5/37 (J.H.F.). A rare and extremely local beetle found on mud near ponds and ditches. Previous most northerly locality, Birkdale sandhills, near Southport.

Leptura (Anoplodera) sexguttata F. On dogwood blossom in pine plantation, Haugh Howe, Pickering (62), (M.D.B.). A very rare species only recorded from New Forest, Darenth, Lynmouth, and Kerry. This specimen may possibly have been introduced as many hundreds of acres have been planted with spruce and larch during the last few years.

- Cryptocephalus moræi* L. By sweeping on railway bank at New Bridge, Pickering (62), 6/39 (M.D.B.). A local species occurring on *Hypericum perforatum*. Previous northern localities—Castle Eden Dene, Durham, and Clappersgate, Westmorland.
- Psylliodes attenuata* Koch. The Hop Flea Beetle, Spa Ghyll Woods, Ripon (64), 23/6/34 (M.D.B.). Locally common on hop from South England to Perthshire. Recorded from Bollin Valley, Cheshire.
- Gymnetron linariæ* Pz. New Bridge, Pickering, 6/39 (M.D.B.). A rare species extending from Kent and Norfolk to the Forth. Taken at Southport. Found on *Linaria vulgaris*, of which it galls the roots.
- Allodactylus exiguus* Ol. Grass Woods, Grassington (64), 22/7/36 (M.D.B.). By sweeping various species of *Geranium* (*sylvaticum*, *dissectum*, *molle*, *pusillum* and *rotundifolium*). Also in moss in winter. Very local. Occurs in South England. A record from Northumberland and Durham probably refers to *A. geranii* Pk. (*affinis* Pk.).
- Liosoma oblongulum* Boh. In moss, Armley, Leeds, 25/4/35 (64), (J.H.F.). A rare or perhaps overlooked species found in chalky and sandy places, in moss, and by sweeping herbage. Has been taken in primroses at Oxford. Previous most northerly record from Leicestershire. Local, but widely spread in Ireland.
- Ceuthorrhynchus atomus* Boh. Allertorpe Common, 27/7/34 (61), (M.D.B.). Waterford Ghyll, Skipton (64), 1/7/34 (M.D.B.). A very local species but not uncommon when found. Occurs in sand-pits, on *Sisymbrium thalianum*, *Iberis amara*, and *Nasturtium officinale*. Has been taken in Cumberland and South Scotland.
- Phytobius (Eubrychius) velatus* Beck. On aquatic vegetation, Stapleton Park, Wentbridge (63), 6/5/39 (M.D.B.). Occurs on *Myriophyllum*, *Alisma*, *Equisetum*, *Potamogeton*, and *Hippuris*. Has been taken in Northumberland and Durham, Lincolnshire, and at Wallasey, Cheshire. Attached to aquatic vegetation and can swim under water.

New records are given for the following species :

- Cicindela campestris* L. ab. *conjuncta* D. Torre. Goathland (62), V. R. S. Johnson (R.R.U.K.). Off heather and sandy paths. Not uncommon with the type.
- C. campestris* L. ab. *connata* Heer. Darnholm, Goathland, V. C. M. Rich (R.R.U.K.). Under a damp stone.
- Carabus nemoralis* L. A noticeable absence in garden at Barnsley (E.G.B.). Usually the commonest of the genus.
- C. violaceus* L. Much in evidence in garden, Barnsley (E.G.B.).
- Acupalpus dorsalis* F. Lindley Reservoir (*64), (J.H.F.), 8/4/39. Only recorded from Thorne Moor and Skipwith.
- Amara fulva* D.G. Abundant in sandy field near Houghton Woods (61), (T.S.), 23/7/39.
- Calathus melanocephalus* L. var. *nubigena* Hal. Two Howes, Goathland, III, A. H. H. Stow (R.R.U.K.). Under stones at high altitudes and curiously localised and uncommon.
- Agonum marginatum* L. Lindley reservoir, Washburndale (64), 4/8/38 (J.H.F.).
- Olisthopus rotundatus* Pk. Two Howes, Goathland, IV, A. H. H. Stow. Flass Brow (62), VII. Sil Howe (62), VII (R.R.U.K.). Not uncommon on shingle by pool sides on the moors and sandy ditches in the heather.
- Bembidion mannerheimi* Sahl. Two Howes, Goathland, IV, V. Thornhill House, IV, A. H. H. Stow. Mill Moor, V. West Beck Side, VIII. (R.R.U.K.). Fairly common on earth and under stones.
- B. nigricorne* Gyll. Two Howes, Goathland, IV (R.R.U.K.). Under a stone. Turned up again in X, when it was not uncommon.

- Bembidion rupreste* L. Eller Beck, Goathland, V (R.R.U.K.). Under shingle, very rare.
- Aepus robinii* Str. Robin Hood's Bay (62), 9/8/39 (T.S.). On scars below Way Foot.
- Patrobis assimilis* Chaud. One example under stone on Sil Howe, Goathland, 9/8/39 (T.S.).
- Dromius agilis* F. Lindley Reservoir, Washburndale, 4/8/38 (J.H.F.).
- D. meridionalis* Dj. Hook Moor (63) at sugar, 15/7/39 (J.H.F.).
- D. linearis* Ol. Goathland, VII (R.R.U.K.). Very rare, by sweeping.
- Brychius elevatus* Pz. Abundant in trout stream, King's Mill, Driffield (61), 8/7/39 (T.S.).
- Haliphus fulvus* F. Eller Beck, Goathland, V (R.R.U.K.). From deeper water under banks, very rare.
- H. wehnckei* Gt. Thornhill House, Goathland, IV, VII, VIII (R.R.U.K.) From cattle pond. Rare.
- Hygrobia hermanni* F. Throxenby Mere (62), (G.B.W.). One larva on edge of south side of Hornsea Mere (61), 29/7/39 (T.S.).
- Noterus capricornis* Hb. Stapleton Park Lake, Wentbridge (63), 6/5/39. (M.D.B.).
- Hyphydrus ovatus* L. Goathland, V. Rare, from a stream-fed pond. Randy Mere Reservoir (62), V, VII. Highly localised in swampy ponds next to reservoir, but not uncommon (R.R.U.K.).
- Hygrotus versicolor* Sch. Stapleton Park Lake, Wentbridge, 6/5/39 (M.D.B.).
- Calambus confluens* F. Thornhill House, IV, V, VI, VIII (R.R.U.K.). Cattle pond, common in the late summer.
- C. impressopunctatus* Schal. With the last, uncommon (R.R.U.K.).
- Deronectes latus* Steph. Eller Beck, V, VI, VII. Fairly common by sweeping stream edges. Apparently confined to certain stretches of this tributary.
- D. septentrionalis* Gyll. Eller Beck, VI, VII, VIII. Very rare and localised (R.R.U.K.). By sweeping stream at edges and by scraping vegetation-covered stones.
- D. sanmarki* Sg. var. *rivalis* Gyll. Several in trout stream, King's Mill, Driffield, 8/7/39 (T.S.).
- Hydroporus umbrosus* Gyll. Goathland, IV-VII (R.R.U.K.). Rare in moorland peat pools.
- H. rufifrons* Duft. Goathland, V (R.R.U.K.). In a peat pool; one.
- H. ferrugineus* S. Goathland, VI (R.R.U.K.). Ditches, very rare.
- Agabus didymus* Ol. Barnbow (64), 26/8/38 (J.H.F.). Goathland, VI-IX (R.R.U.K.). Most uncommon in ditches fed by running water. Also from cattle ponds leading off from these. Eller Beck, V, VI (R.R.U.K.).
- A. bipustulatus* L. var. *solieri* Aub. Thornhill House, Goathland. A single specimen of this northern variety from a very small rusty drinking pool in a field, VII (R.R.U.K.).
- Ilybius fenestratus* F. Thornhill House, VIII (R.R.U.K.). Very rare. One in cattle pool.
- I. aenescens* Th. Goathland, V-VIII (R.R.U.K.). Peat pools and moorland reservoir. Thornhill House, VII (R.R.U.K.). Very rare from cattle pond.
- Berosus luridus* L. Canal Reservoir, Ryhill (63), 1/7/39 (M.D.B.).
- Atractelophorus arvernicus* Mt. Eller Beck, V, VI (R.R.U.K.). Very rare; by sweeping under banks.
- Hydræna nigrita* Gm. Goathland, VI (R.R.U.K.). Very rare on ditch vegetation.
- Cercyon lateralis* Mm. Goathland, V (R.R.U.K.). By sweeping; rare.
- Gauvopterus fulgidus* F. Meanwood (64), 23/7/36 (J.H.F.). In waste skins.
- Stenus crassus* St. Queen Mary's Dub, Ripon (64), 17/6/39 (W.D.H.).

- Micralymma marinum* Str. Robin Hood's Bay, 9/8/39 (T.S.), (G.B.W.).
On scars below Way Foot.
- Subcoccinella 24-punctata* L. Railway bank, New Bridge, Pickering, 6/39 (M.D.B.).
- Adalia bipunctata* L. ab. *annulata* L. Barnsley (E.G.B.).
- A. decempunctata* L. ab. *semifasciata* Weise. Barnsley (E.G.B.).
- Coccinella hieroglyphica* L. Adel Moor (*64), 19/4/39 (J.H.F.).
- C. septempunctata* L. Barnsley (E.G.B.). Extremely common.
- Dacne rufifrons* F. Queen Mary's Dub, Ripon, 17/6/39 (W.D.H.).
- Triplax ænea* Schall. Carthick Wood, near Harewood (64), 7/4/39 (J.H.F.). Under bark.
- Tritoma bipustulata* F. Buttercrambe Woods (62), 22/6/35 (M.D.B.).
Only recorded from York.
- Onthophilus striatus* Pk. Brocodale Woods, Wentbridge (63), 6/5/39 (M.D.B.).
- Epurea melanocephala* Mm. Etton Ghyll, Helmsley (62), 25/5/35 (M.D.B.).
- Byturus æstivus* L. Haugh Howe, Pickering (62), 6/6/38 (M.D.B.).
- Diphyllus lunatus* F. Queen Mary's Dub, Ripon, 17/6/39 (W.D.H.).
- Telmatophilus caricus* Ol. Queen Mary's Dub, Ripon, 17/6/39 (W.D.H.).
- Antherophagus nigricornis* F. Grass Woods, Grassington (64), 21/7/34 (M.D.B.). Wass, near Coxwold (62), 2/8/34 (M.D.B.).
- Scaphisoma agaricinum* L. Haugh Howe, Pickering, 6/39 (M.D.B.).
Decaying oak log.
- Litargus connexus* Gf. Queen Mary's Dub, Ripon, 17/6/39 (W.D.H.).
Seacroft, Leeds (64), 4/39 (W.D.H.).
- Mycetophagus piceus* F. Near Temple Newsam, Leeds (64), 11/35 (J.H.F.).
- Lathelmis volkmari* Pz. Stream, New Bridge, Pickering, 6/39 (M.D.B.).
- Aphodius depressus* Kg. ab. *atramentarius* Er. Goathland, VII (R.R.U.K.). Sheep dung, very uncommon.
- Aegialia sabuleti* Pz. Sand by stream, New Bridge, Pickering, 6/39 (M.D.B.).
- Geotrupes typhaeus* L. var. *pumilus* Mm. Hawthorn Hill, Goathland, V (R.R.U.K.) With the type but far less common on a sandy path through the heather. Eller Beck, VI (R.R.U.K.). Sandy path.
- G. vernalis* L. Water Ark, Goathland, VII. Crawling in heather. (R.R.U.K.). Thornhill House, VII, A. H. H. Stow. (R.R.U.K.).
On path.
- Melolontha vulgaris* F. ab. *albida* Mt. Beck Hole, Goathland, VI, J. W. Stanforth (R.R.U.K.). A single specimen in flight.
- Throsoc d-ermestoides* L. New Bridge, Pickering, 6/39 (M.D.B.).
- Sericus brunneus* L. Ganton (62), 5/39, P. Jefferson (J.H.F.).
- Corymbites cupreus* F. var. *ærginosus* F. Flass Brow, Goathland, VII (R.R.U.K.). Very rare in flight.
- C. sjælandicus* Ml. Mill Moor, Goathland, V (R.R.U.K.). Uncommon, generally in flight in heather.
- Hydrocyphon deflexicollis* Ml. West Beck Side, Goathland, VII (R.R.U.K.). Quite common by sweeping.
- Denticollis linearis* L. ab. *suturalis* Df. Goathland, VI (R.R.U.K.). A single specimen drowned in peat pool.
- Pyropterus affinis* Pk. Brocodale, Wentbridge, 6/5/39 (E.G.B.). Five larvæ. Only British localities are Sherwood Forest, and Wheatley Wood, near Doncaster.
- Lampyris n-octiluca* L. The 'Glow-worm.' Staintondale (62), VI, W. Drake, in fair numbers (G.B.W.).
- Rhagonycha lutea* Ml. Goathland, VII (R.R.U.K.). * One by sweeping.
- Necrobia rufipes* D.G. Goathland, VI (R.R.U.K.). One from a dried sheep's carcass.

- Necrobia ruficollis* F. *violacea* L. and *rufipes* D. G. Adel, 22/8/38 (J.H.F.).
In sheep's skulls.
- Strangalia melanura* L. Haugh Howe, Pickering, 28/6/39 (M.D.B.).
Very abundant on dogwood blossom in pine plantation (*62). Only recorded from Doncaster.
- Alosterna tabacicolor* D.G. Combs Wood, Goathland, VII (R.R.U.K.).
One from an umbellifer.
- Donacia vulgaris* Zsch. Queen Mary's Dub, Ripon, 17/6/39 (W.D.H.).
- Plateumaris sericea* L. Mallyan Spout (62), VII (R.R.U.K.). One by sweeping.
- P. discolor* Pz. Mill Moor, Goathland, V (R.R.U.K.). One, sweeping heather at water's edge.
- Cryptocephalus pusillus* F. Houghton Woods, East Yorks., 23/7/39 (T.S.). Commonly by beating birch, etc.
- C. labiatus* L. With the last, commonly on birch.
- Chrysomela hyperici* Fo. Haugh Howe, Pickering, 28/6/39 (M.D.B.).
On *Hypericum*.
- Lochæa cratægi* Fo. Brocodale Woods, Wentbridge, 5/6/37 (M.D.B.).
Near Rievaulx, 16/4/39 (J.H.F.).
- Longitarsus senecionis* Br. Coxwold (62), 2/8/34 (M.D.B.).
- Batophila rubi* Pk. New Bridge, Pickering, 6/39 (M.D.B.).
- Mantura obtusata* Gyll. I, Pickering, 6/39 (M.D.B.).
- Hippuriphila modeeri* L. Buttercrambe Woods (62), 13/8/38 (M.D.B.).
- Orchesia micans* Pz. Leeds, 4/39 (W.D.H.).
- O. undulata* Kr. Haugh Rigg, Pickering, 6/39 (M.D.B.). Very abundant under bark of oak log, forty or fifty taken or seen.
- Hallomenus binotatus* Quens. Blubberhouses (64), 13/8/39 (J.H.F.).
In fungus on tree.
- Melæ violaceus* Mm. West Beck Side, Goathland, V (R.R.U.K.). Very rare in rushes by spring, near Robin Hood's Bay, 6/37 (J.H.F.).
On the moors, Aberford, 3/4/38, one; 10/4/39, seven (J.H.F.).
- Anthrribus variegatus* Geoff. Haugh Howe, Pickering, 6/39 (M.D.B.).
- Apion subulatum* Kirby. Pickering, 6/39 (M.D.B.).
- A. miniatum* Germ. Fairburn Ings (64), 29/5/37 (M.D.B.). East of Aberford, 10/4/39 (J.H.F.).
- A. hookeri* Kirby. Strensall Common (62), 17/5/36 (M.D.B.).
- A. marchicum* Host. Askern (63), 25/6/38 (M.D.B.).
- Bagous limosus* Gyll. Shirley Pool, Askern, 14/5/39 (M.D.B.).
- Stenocarus fuliginosus* Ml. Strensall Common, 17/5/38 (M.D.B.).
- Poophagus sisymbrii* F. Queen Mary's Dub, Ripon, 17/6/39 (W.D.H.).
- Rhinoncus gramineus* Bd. Skipwith Common (61), 3/4/37 (M.D.B.).
- R. castor* F. Strensall Common, 17/5/38 (M.D.B.).

REVIEWS AND BOOK NOTICES

Bibliography of the Larvæ of Decapod Crustacea, by Robert Gurney, M.A., D.Sc., F.L.S., pp. vi+123. Ray Society, 12/6. Dr. Gurney tells us in his preface that he had hoped at some period to publish a monograph of Decapod larvæ, and that this monograph would include the bibliography which now appears. Unfortunately, questions of cost stand in the way of the complete publication, but we can share the author's gratitude to the Ray Society for bringing out the valuable bibliography. The volume brings the list of works quoted to May, 1939. The first half of the book is a straightforward compilation with authors' names in alphabetical order. The classified list which follows is arranged according to families and genera, with the appropriate references to authors throughout. The great value of this second part will be obvious.

The Comity of Spiders, by William Syer Bristowe, M.A., Sc.D., F.L.S. Vol. 1, pp. x+228, with 19 plates and 15 text-figures. Ray Society, 25/-. This volume is a welcome addition to the rather

scanty literature relating to British spiders. Although Field Clubs and Natural History Societies are to be found throughout the land, there are comparatively few serious workers in Arachnology. This may be due to lack of text-books suitable for systematic work, as we have suggested before in this journal. Dr. Bristowe's manual will be found invaluable to both beginners and experienced arachnologists. Following an introduction of ten pages entitled 'British Spiders and their Distribution' is a complete list of British Spiders, which brings the work to page 102. The remainder of the book comprises two highly interesting chapters on Distribution by environments, and the Dispersal of Spiders, one on Spider Population with some illuminating statistics, and finally there is a very full bibliography. The nomenclature is revised up to the date of going to press, and where necessary synonyms are given corresponding to the names employed by O. P. Cambridge in his 1900 list. The great value of the work under review is its comprehensiveness. When the promised second volume appears we shall have a most complete survey of the distribution of British Spiders and a full account of their relationships with other living creatures. The nineteen plates give superb photographic illustrations of spiders. These have been prepared with the utmost care and skill and form a most appropriate supplement to the text.

Rookeries and Roosts and the Desertion of Rookeries, by **James T. Green and Robert J. Flintoff**, pp. 40 with map and diagrams. T. Buncle, Arbroath, 1/-, and obtainable from Mr. R. J. Flintoff, Goathland, Yorks, for 1/- post free. In this small booklet are gathered together a surprising number of observations and statistics relating to the very fine group of rook colonies situated in and near Thornton-le-Dale. The authors' names are a sufficient guarantee of the scientific value and accuracy of the numerous records, and although Mr. Flintoff very magnanimously gives the account under joint names, it is evident that the major part of the marshalling and sifting of reports, and also the formulation of the conclusions arrived at, are the work of Mr. Flintoff himself. As far back as May, 1928, the late Mr. Green reported to Mr. Flintoff the case of the rather remarkable complete desertion of two rookeries numbering 220 nests, and this at the height of the breeding season. Mr. Flintoff, with his characteristic thoroughness, determined to conduct a long-period investigation to discover if possible the cause or causes of rookery desertions, and to examine critically the accepted explanations. The work has extended over ten seasons and Mr. Flintoff is to be congratulated on the results of his and his collaborators' labours. It would be out of place here to state Mr. Flintoff's case in detail, but some of his conclusions must be quoted, and although they differ from those which are to be found in most works on British birds, we think Mr. Flintoff has proved his points in so far as his observed rookeries are concerned. He shows that carrion crows cannot be blamed for the observed desertions. There were several cases where carrion crows nested in small rookeries with no apparent ill effect on the Rook population. There was no definite evidence that grey squirrels molested Rooks. Having regard to certain reports received by the author from Denmark, Finland, and Sweden that desertions in the breeding season were unknown in these lands, Mr. Flintoff puts forward the hypothesis that desertions of the kind observed, resulted from sudden stimulation of the migration instinct. This would be a most fascinating line of thought to follow up, and extensive 'ringing' seems to be indicated. Another definite and well-supported conclusion arrived at is that Rooks appear to have no special power enabling them to distinguish unsafe trees from sound ones. Mr. Flintoff is also interesting when discussing Rook Roosts and their association with Rookeries. We note that any profit from the sale of the booklet will be given to the *North-Western Naturalist*, where the work originally appeared.

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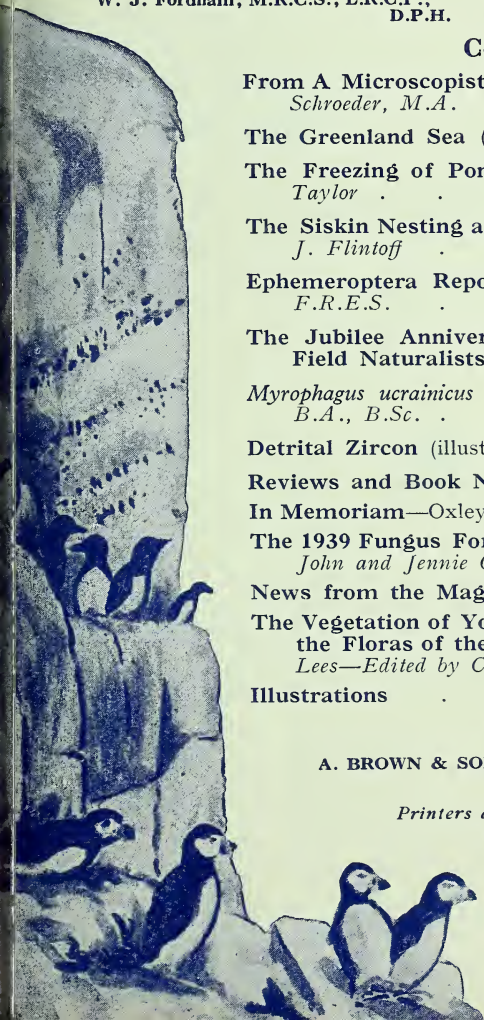
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FROM A MICROSCOPIST'S NOTE-BOOK

W. LAWRENCE SCHROEDER, M.A.

THE belated continuation of notes from my record book may need explanation. Retirement from ministerial wrestlings with the godly, the transportation of goods to one of the isles of the saints, a fierce and most unkindly attack of shingles, operations which somewhat limited activity to the extent of an air cushion, and the necessary convalescence of several months, may perhaps be accepted as sufficient reason for the suspension of the note-book paragraphs. But to resume!

Of collecting grounds about Leeds, the Bramhope ponds have been among the most satisfying. But their popularity has led to a diminution of their reputation, for the waters have been swept so often and so meticulously, lest anything should escape the net, that there have been times when an hour's work with the collecting apparatus has yielded a few crustacea, a mite, or an odd beetle, and a little filamentous vegetation. Yet there have been times when a preliminary dip has gladdened the eyes and rejoiced the heart. Some of these notes belong to those happier days, before hordes of juvenile collectors despoiled the teeming waters.

In a September month, the ponds yielded goodly results. The Tardigrade—*Macrobiotus Schultzei*—elicited the customary chuckle, as it slid and clawed its way on the slide; it walked with a more dignified tread when it reached the weed, and seemed to take a delight in eluding our gaze, as it nosed its way among the debris. A crawling mite—*Limnochares holosericea (aquaticus)*—moved without haste, without rest, among the vegetation: it seemed to have no desire to sample the fare. But the most cheering find was the tube-dwelling rotifer—*Limnias ceratophylli*—which was in quantity. The cases, of a viscid nature, were covered with fluffy vegetable debris, brownish in colour. The foot is anchored to the weed, and the case begins around it. In contraction, the foot is concertina-like. In most of the cases, an egg rested by the side of the foot. The disc is double-lobed, and the antennæ are rather longer than in *Melicerta ringens*, and end in four hairs. On emerging from the case, the antennæ of the creature first appear. In order to get a Lebensraum for the working of the ciliated discs, the *Limnias* will push again the hindering weed. To get clear of the algæ, one of the creatures bent itself to a right angle.

On an algal filament was the stalked winter egg of a *Rhabdocoel*, showing movement of the embryo. The observation was made on March 25th, but the material was the Bramhope September Collection. The *Rhabdocoel* was born at 11-18 p.m. on March 26th: the cap of the egg was pushed open on one side and in twenty seconds the creature was free and extraordinarily active. It was a *Jensenia pinguis*.

In the same jar a great number of nematoids were squirming about in sigmoid formation. I have still to see a nematoid tackling food in any convincing way.

Some fine specimens of *Euplotes patella*, one of the ciliates, commanded attention for some time. They were about 90μ long and 54μ wide. There were seven dorsal ridges and the oral cilia numbered from 18 to 21. There were nine ventral setæ and about four caudal styles, the latter 40μ long. Under a moderately high power— $\frac{1}{8} \times 10$ —the detail was remarkably clear.

From Bramhope stuff taken on March 18th, slides exhibited the rotifer *Philodina roseola* in fine working order; the green *Paramoecium bursaria*, illustrative of the symbiotic relation of the alga *Chlorella vulgaris* with a ciliate; and a ciliate *Stichotricha secunda*, about 95μ long and 20μ wide, with very long cilia at the anterior ventral side: it showed numerous round green algæ in process of digestion. Another very lively ciliate—*Cyclidium glaucoma*—about 20μ long and 9μ wide, gave an opportunity of counting the pulsations of the posterior contractile vacuole; on an average every nine seconds, variations from seven to eleven seconds.

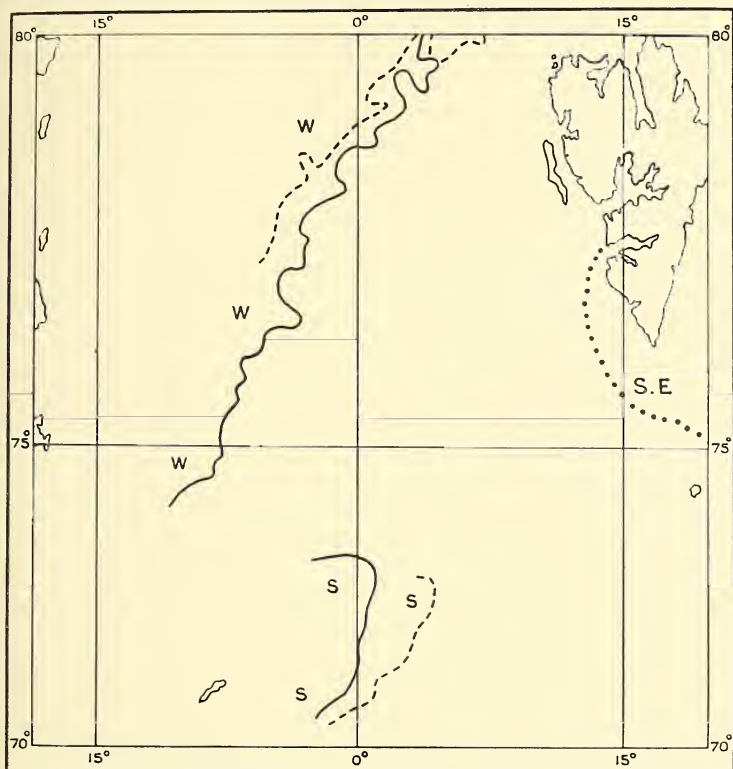
To crown all, the March collection included fine healthy specimens of *Volvox*, with daughter cells complete.

The Status and Distribution of Wild Geese and Wild Duck in Scotland, by **John Berry, Ph.D., F.R.S.E.**, pp. xii+190, with 5 illustrations and a coloured map of Scotland showing the faunal areas. Cambridge University Press, 10/6. This is the second volume in the series being brought out by the International Wildfowl Enquiry, and the title of the volume itself gives some idea of the magnitude of the task which Dr. Berry has undertaken. There is no doubt that the research has been done exceedingly well. Many factors influence distribution of bird life, and some cancel out, or at any rate mask others. Changes in the numbers of sportsmen and in the weapons employed, methods of approach, etc., agricultural changes, disturbances caused by motor cars, motor boats, aircraft, and so on, have had their effects on wildfowl distribution. One of the most interesting examples of the working of an indirect factor is that quoted by the author on pages 160-161. Here, Mr. George W. Temperley (whom Dr. Berry refers to as Mr. W. G. Temperley on the above pages and W. C. Temperley in the index) discusses the sequence of agricultural, game-preserving, and other operations on the island of Raasay. When finally game preservation was abandoned, the unprotected game birds quickly fell victims to the gulls and hooded-crows, and now these latter are easily the dominant species. Dr. Berry's book will prove of value to all ornithologists, and even those who are not systematic students would do well to read the short general discussions. It will give them more than a superficial idea of the wildfowl problem, and they will find them interesting reading. The book begins with a summary of the status of wildfowl in each faunal area, and this is followed by sections containing reports on species, first geese, then ducks. After each section comes a general discussion, and there is a bibliography. The illustrations are good and we particularly commend to our ornithological readers the enlarged sections of film used for counting numbers of birds in a flock.

THE GREENLAND SEA

R. W. GRAY

THE Greenland Sea, *i.e.* the wide and deep channel between Greenland and Spitsbergen, is both an outlet and an inlet of the Arctic Ocean. Through its western half ice-cold, ice-encumbered water flows south-west, while through its eastern



The Ice in the two open seasons 1876 and 1887

- W. The whaling or north ice (the east ice of the senior Scoresby's log-books), *i.e.* the ice which issues from the Arctic Ocean and drifts south along the Greenland Coast. Among it the Greenland whales were caught, hence the term whaling ice.
 - S. The sealing or south ice (the west ice of Scoresby's log-books), *i.e.* the ice which forms *in situ* in the winter months and which provides breeding places for the Saddle-back and Hooded Seals.
 - S.E. The south-east ice, *i.e.* the ice which coming from the east enters the Greenland Sea between Cape Lookout and Bear Island. It is usually scanty in amount and usually melts before it effects a junction with the much more abundant ice coming from the north-east.
- Positions of whaling and sealing ice-packs from charts by my father; position of south-east ice conjectural.

1876 —————

1887 - - - - -

half warm, 'Gulf-stream' water flows north-east ameliorating the climate of Western Spitsbergen and making its shores easily reached.

The ice, which is mostly very thick, is at first mostly in

1 Mar. 1940

the form of very extensive sheets termed ' fields ' and ' floes,' but as it drifts south into lower latitudes it is sooner or later acted on by the swells or undulations of the ocean and converted into innumerable *pieces* of ' pack ' or broken ice. Finally, as it continues to drift south along the Greenland coast it melts and disappears.

As Scoresby explains in his *Arctic Regions*,¹ there are two kinds of seasons : ' open ' and ' close ' ; in the former there is a large influx of ' Gulf-stream ' water and the ice is drifting rapidly south-west, in the latter, on the other hand, the opposite is the case.

The charts sent herewith will, perhaps, help the reader to understand the difference between open and close seasons.

In open season the influx of Gulf-stream water is so great that north of about lat. 73° the sea, outside the heavy or polar ice, remains unfrozen even in the winter months, and in the spring when the whaling vessels arrived on the scene they found an open navigation as far as lat. 80° or 81° north. In close seasons, on the other hand, owing to the diminished influx of Gulf-stream water this part of the sea freezes, Spitsbergen becomes cut off from the open sea and the whaling vessels found their northward progress barred or hindered by a barrier of ice in lat. 75° or 76° . This was markedly the case in 1881, the ' south-east pack,' or barrier of ice, being unusually thick and extensive and lasting well into the summer months.

As stated in my letter, ' Ice-bergs in High Latitudes,'² besides ordinary ice (*i.e.* congealed sea-water) pieces of ice freighted with tree-trunks or mineral matter, including sand and shells and small flat-topped ice-bergs issue from the Arctic Ocean and drift south through the Greenland Sea. The former which is river ice come from the Lena or other large Siberian river, while the latter, which is, of course, land ice doubtless comes from the recently discovered *Severnaja Zemlja* islands situated north of Siberia.

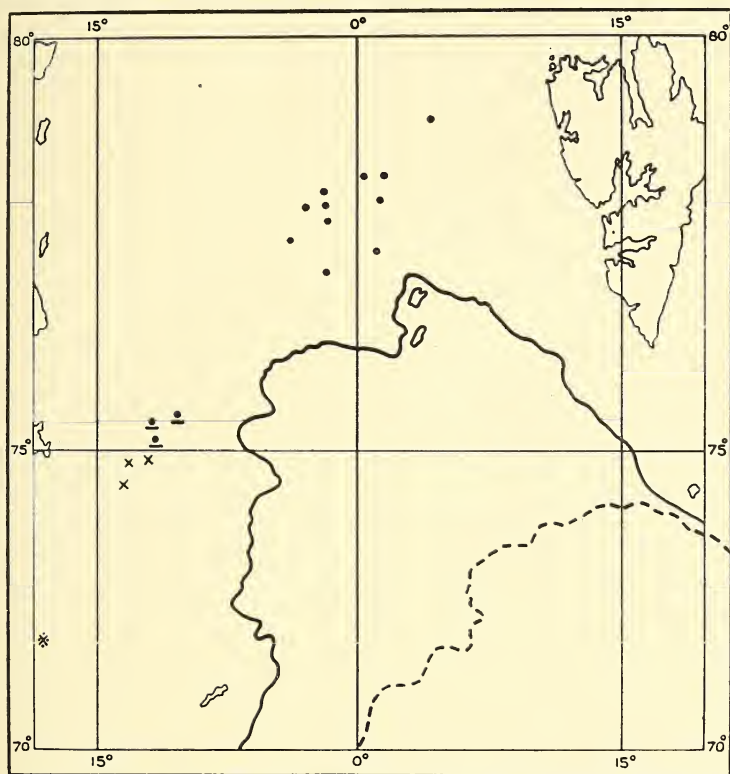
It is obvious, as was understood by the celebrated Scoresby, that the ice which drifts south through the Greenland Sea tells an important tale about the regions farther north : its vast amount implies an absence of extensive land in very high latitudes and its great thickness and the tree-trunks and mineral matter associated with it imply a slow-flowing current coming from the direction of Siberia.

It is also obvious, as was understood by the American whaling captain Thomas Long, that a discovery vessel ought to sail or drift with the ice instead of trying to advance against

¹ Vol. I, p. 226.

² *Nature*, 1929.

it as did Parry in 1827. In a paper which he published in 1868 in an American newspaper¹ he says: 'Nearly all the attempts which have heretofore been made to reach the North Pole have been prosecuted through Baffin's Bay and the



Edge of the Ice in the two close seasons 1881 and 1888. Also the positions in which Greenland Whales were seen in 1888

1881 -----
1888 —————

● Whales seen in May.
○ Whales seen in June.

× Whales seen in July.
* Whales seen in August.

Greenland Sea, where they have uniformly encountered an adverse current, which together with the large masses of ice which were drifted south by this current have always baffled their attempts.'

'Instead then, like Sisyphus, of ceaselessly contending against insuperable obstacles and these continuous currents. . . . I would wish to profit by the experience and observations of former navigators, and avoiding the difficulties which they

¹ *The Honolulu Gazette*; also see *Nautical Magazine* and *Geographical Journal* 1868.

encountered and endeavoured to overcome, I would avail myself of the current for the purpose of crossing the Polar Ocean.'

About a decade later the American exploring vessel *Jeannette*, followed, apparently unwittingly, Captain Long's advice. Entering the Arctic Ocean through Behring Strait in 1879 and soon after becoming beset she drifted with the ice for twenty-two months until she reached the vicinity of the New Siberian Islands, where in June, 1881, she succumbed to ice-pressure. Had she but continued to float she would undoubtedly have reached the Greenland Sea, in fact, three years later (in August, 1884) wreckage belonging to her was found by an Eskimo on a piece of ice off Julianhaab, South-West Greenland.

The finding of the *Jeannette* wreckage attracted very little attention in this country but its significance was not lost on Professor Mohn, of Oslo, who in a paper read on November 14th, 1884, before the Oslo Academy of Science, correctly indicated the route the wreckage must have followed. A translation of this important paper reads as follows: 'The problem is now what way the articles have come. That they should have followed a course west of Greenland is not probable for whatever things drift out of Smith Sound will follow the coast of Labrador, and off South Greenland the current has a northerly and westerly course, continuing the cold ice-bearing current that runs from north to south along the east coast of Greenland. The ice-floe with the articles from the *Jeannette* must have followed this current . . . the shortest route from the New Siberian Islands (in the vicinity of which the *Jeannette* was lost) would pass close by the North Pole to the coast of East Greenland. The distance to lat. 80° is 1,380 nautical miles, and a further 1,680 miles to Julianhaab. Making a total of about 3,000 miles. The distance was covered in 1,100 days, *i.e.* at an average rate of $2\frac{3}{4}$ nautical miles a day. We know the speed of the current as regards the latter part. The Greenland Polar Current has a speed of 4 miles a day nearest the coast, and 10-12 miles a day at the ice edge. If we take the lowest speed to be most likely . . . the articles should have taken 405 days to the 1,620 miles along the east coast of Greenland. The remaining 695 days would be the time taken to drift from the New Siberian Islands to the coast of Greenland in lat. 80° N. If we choose the shortest route, close past the North Pole, 1,380 miles, the average speed will be two miles a day, which is a medium rate between the 1 mile a day covered by the *Jeannette* in the East Siberian Polar Sea and the 4 miles a day of the East Greenland current. Should the articles have taken a westerly course, south of Franz Joseph Land, between the latter and

Spitsbergen, we get rather a crooked line, which makes the distance longer and presupposes greater speed. The Austrian Expedition vessel *Tegetof* drifted along part of this route the winter before Franz Joseph's Land was discovered. But the speed was barely $\frac{3}{4}$ miles a day. The route north of Franz Joseph's Land and Spitsbergen and close past the North Pole is therefore more probable. The drift of the articles from the *Jeannette* and the Siberian larch found as drift-wood at Spitsbergen, Greenland and Jan Mayen indicate that the Siberian Arctic makes its contribution to the currents of the Atlantic Ocean, mainly the East Greenland Polar current, and the drift of the *Jeannette* articles seems more particularly to suggest that it is not improbable that the European part of the regions round the Pole is an ocean—but an ocean covered by ice drifting towards the west and south.'

I have quoted Professor Mohn's paper at considerable length firstly, because a translation of it does not appear to have been hitherto published; secondly, because it forms an important link in the chain of events which led up to the despatch of the 'Fram' Expedition which did so much to dissipate the fogs of ignorance and misconception which so persistently and needlessly clung to the North Polar Region. All honour and credit to Dr. Nansen and his intrepid companions.

In addition to ice, areas of water green in colour and rich in the creatures on which whales feed come from the direction of Siberia and drift south-west through the Greenland Sea. These areas of green or 'dark' water, termed 'feeding banks' by the whalers, have a powerful attraction for the Greenland whales (and Narwhals); they come up from the south-west in the spring doubtless to meet them, and after accompanying them for considerable distances they resume, sooner or later, their northward migrations to meet other feeding banks drifting, it is supposed, from higher latitudes towards the Greenland Sea.

The Greenland Sea appears to have been the scene of two distinct right-whale fisheries, viz.:

- (a) The 'Ice fishery,' *i.e.* the fishery for the Greenland whale *Balaena mysticetus* amongst or in the near vicinity of the southward drifting heavy or polar ice.
- (b) The 'Bay fishery,' *i.e.* the fishery probably for the Atlantic whale *B. glacialis* in the warmer ice-free waters which leave the bays of Spitsbergen and Jan Mayen.

At the Ice fishery, as stated in my 'Peterhead Sealers and Whalers,'¹ the whales were mostly caught in May and

¹ *Scottish Naturalist*, 1932-1933

June, the whalers attacking the animals before they disappeared into the depths of the ice; on the other hand at the Bay fishery, as stated in my paper 'The Atlantic or Biscay Whale,'¹ the fishery was confined to open seasons and the summer months.

N.B.—Recently I have come across a piece of evidence which seems to confirm my views on the identity of the whales killed at Spitsbergen in the seventeenth century. It occurs in Janssen's *Tausend Jahre Deutscher Walfang*, Leipzig, 1937, p. 79. A translation of it reads as follows: 'Already in the time of the Bay fishery you found some old bulls which would not be caught. Their backs were covered with white marks they had from the harpoons and lances. Some of them had names, and at this particular time they thought most of them were over 100 years old. Some had so many white scars that they looked like a hedgehog. Mussles—Muscheln—(? Barnacles) and grass growing on their backs and whale-like eating holes in their soft parts. He who killed one of these famous animals was considered very lucky. Captain Kircheiss told me often that these beasts came to the ships to scratch their backs on them, he had often seen them himself.' Barnacles are, of course, found on Atlantic but not on Greenland whales.

What about the whales killed at Davis Straits? My father used to say that Greenland Whales yield 1 cwt of 'bone' for each ton of oil which is no doubt approximately true.

Scoresby (*Arctic Regions* Vol. II, pp. 391-392) says that during the four years ending 1817 the Greenland Sea Whales yielded 1 ton of bone for every 19½ tons of oil whereas the Davis Straits Whales only yielded 1 ton of bone for every 21 tons of oil. Scoresby goes on to say 'It is remarkable that this should have been the case, when we consider that small fish afford less whale-bone than large fish in proportion to their produce in oil, and yet the Greenland fish which, on an average of four years, were much smaller than those caught at Davis Straits, have produced the largest proportion of whale-bone. The whales taken at the Greenland fishery only average 9½ tons of oil each, but those caught at Davis Straits average 14 tons. It would therefore appear that the large whales caught near Spitsbergen are much stouter than those taken in Davis Straits, and afford so much greater a proportion of fins, as more than compensates for the deficiency of the small whales.'

Is Scoresby's explanation the correct one? Is it not more probable that in both regions two species of right whales were involved: Greenland Whale *B. mysticetus* and Atlantic

¹ *The Naturalist*, July, 1937

Whales *B. glacialis*, but that at 'The Straits' a larger proportion of the latter were being killed than at 'Greenland' (*i.e.* in the Greenland Sea)? This may also seem improbable but in my *Peterhead Sealers and Whalers* I have already suggested that in the very open season 1817 some of the whales which were killed were Atlantic Whales not Greenland Whales and it is not impossible that this was also happening at Davis Straits. Atlantic Whales have, of course, shorter and lighter whale-bone than Greenland Whales.¹

THE FREEZING OF PONDS AND LAKES

E. WILFRED TAYLOR.

THE writer has often noted with surprise the power possessed by certain water birds of maintaining an open area of water in the middle of a frozen pond or lake. During a prolonged frost the Ducks leave in search of open water, but Coots and Swans appear most reluctant to do so, and it is difficult to see how the latter can obtain suitable food once the whole area is frozen. The hard frost of January has provided an opportunity to study this problem, and it is interesting to note that about 150 Coots and 5 Swans have contrived to keep open a small area in Castle Howard Lake, even though the ice over the remainder has reached a thickness of 6 in. at least.

It may be thought that the formation of ice is prevented by the incessant movement of the birds, but this does not appear to be the case as no tendency for ice to form could be observed in the opening. One is forced to the conclusion that the animal warmth of this number of birds is sufficient to maintain the temperature of the water a little above the freezing point. When it is remembered that the temperature of the water immediately below the ice is above the freezing point and that water is not a good conductor of heat it will be realised that the required output of heat in still water is not very great.

Occasionally a Coot or Swan would take the air and as the area of open water was much too restricted to alight in, the only alternative was the surface of the ice which had a light covering of frost. It was most interesting to observe the contact of the birds feet, first alternatively at long intervals and finally to note the 'glissade' with both feet in firm contact with the ice.

The birds found it difficult to create sufficient friction to check the speed and an alighting Coot which lost its balance, fell over side-ways and showed an unsuspected talent for acrobatics, almost outrivalled the accomplishments of Donald Duck elsewhere.

¹ *Scottish Naturalist*, 1932-1933; also my 'Spitsbergen Whale-fishery of 17th Century' *Nature*, 1930, and my 'Atlantic Whales, etc.' *The Naturalist*, July, 1937.

THE SISKIN NESTING AT GOATHLAND IN 1939

ROBERT J. FLINTOFF

ON May 26th, 1938, a young friend of mine, Willis Graham, of Thackside Farm, Goathland, informed me he had seen a Siskin nesting near the farm, about 20 feet from the ground, in a Scotch Pine. It is presumed Jays robbed the nest, as fragments of the shells were scattered on the ground. These were carefully preserved. I sent the nest and eggs to my kind friend, Captain M. H. C. Hinton, F.R.S., of the British Museum, and received the following report: 'I have had the nest you sent examined by the Rev. F. C. R. Jourdain and other experts, and they are inclined to think it is that of the Siskin. The remains of the eggs also point to this bird. As the nest was in a Scotch Pine, high up, it looks very much as if the birds were quite genuine natives, so to speak, and not escaped cage-birds. These latter have been known to breed in southern counties, but as a rule, low down in trellis work or pergolas.'

Mr. Benjamin Taylor, Denefield, Crescent Avenue, Whitby, also had this nest under observation, and has very kindly supplied me with a report on his notes made at the time.

A full account of the incident was published in *The North Western Naturalist* for March, 1939.

EPHEMEROPTERA REPORT FOR 1939

JOHN R. DIBB, F.R.E.S.

WHILE records of Mayflies during 1939 have only been few, the order has by no means been neglected. Since the last published list of Yorkshire species, the subsequent records have been collected from the lists appearing in this Journal following Union excursions. Additional records have also been communicated as well as specimens for determination. A new list of records has therefore been prepared for early publication in *The Naturalist*.

Attention is drawn to the paper on 'Some Derbyshire Mayflies,' by Mr. J. M. Brown, which appeared in *The Naturalist* last March (pp. 85-87), because practically all the species recorded are also found in Yorkshire, and notes are given under most species referring to nymphal and adult habitat.

Mr. H. Whitehead, in his Freshwater Biological notes (*The Naturalist*, 1939, pp. 216 and 244) refers to the nymphs of *Cloeon* and *Caenis*.

We are indebted to Mr. John Wood for further beautifully-mounted specimens and these, together with those of several years past, form a valuable addition to the above-mentioned Yorkshire List, which we gratefully acknowledge.

THE JUBILEE ANNIVERSARY OF THE SCARBOROUGH FIELD NATURALISTS' SOCIETY

W. J. CLARKE

ON Monday, January 22nd, the members of the Scarborough Field Naturalists' Society celebrated the 50th Anniversary of the founding of their Society. The meeting took the form of a *conversazione*, held at Messrs. Rowntree's Café, and there was a large attendance.

A number of interesting objects were on exhibition, including :

Shells of the family *Helicidæ* and local flint implements, by E. A. Wallis.

Plans of the pagan Saxon cemetery recently uncovered at Staxton, with a selection of pottery, implements, etc., found there, by G. W. Gwatkin.

Two cases of *Lepidoptera*, by Miss I. Thomas.

The minerals which go to make granite, by D. W. Bevan.

A collection of mounted seaweeds, by E. R. Cross.

A case of large tropical beetles, by G. B. Walsh.

A collection of amulets and charms carried for protection by soldiers and sailors during the 1914-18 war, by W. J. Clarke.

In his address the President (Mr. W. J. Clarke, F.Z.S.) said that fifty years ago three young men—Charles Head, Walter Gynge, and himself—met and decided to try and form a naturalists' society in Scarborough. The attempt was successful, and the first meeting took place on November 11th, 1889. The new Society was affiliated to the Yorkshire Naturalists' Union, and an application to the Museum authorities to meet in that building being refused, for the first year meetings were held at the homes of various members. The meetings were eventually removed to the Museum, the first taking place there on November 13th, 1890.

The new Society attracted many working members of excellent ability, and during its existence has been second to no other provincial body of its kind. In those early days anyone taking an interest in birds or insects was considered to be a bit soft in the head, and that this feeling has not altogether died out was shown by a recent reference in the press to the members of the Society, who were described as 'pottering butterfly catchers' and 'doddering bird-nesting half-wits.'

The President went on to speak of the destruction of the beauties of the countryside and the loss of public footpaths in recent times, and urged all members to support the Council for the Preservation of Rural England, the Commons, Open Spaces and Footpaths Preservation Society, and the local Footpaths Preservation Society.

After an excellent supper, three old members—Messrs.

D. W. Bevan, E. R. Cross, and E. A. Wallis—gave short reminiscences of the early days of the Society. Afterwards the proceedings terminated with an exhibition of lantern slides, which were chiefly of old members of the Society, and records of excursions held many years ago.

[It will be noted that Mr. Clarke, the sole survivor of the original members, holds the office of President this year. Hearty congratulations to the Society and to him.—EDITORS.]

MYROPHAGUS UCRAINICUS (Wize) Sparrow

A Fungus New to Britain

T. PETCH, B.A., B.Sc.

ON the occasion of the Fungus Foray at Ingleborough in September 1934, I found, among damp moss on a cliff face, a dipterous pupa which broke when handled and disclosed a pale reddish, granular mass of spores. Other pupæ gathered at the same time were healthy, as were also fifteen similar pupæ collected in a similar situation at Hubberholme in September 1936. After failing to identify the fungus, I described it as *Entomophthora* (*Tarichium*) *reticulata* in *Trans. British Mycol. Soc.*, XXIII (1939), p. 127.

The late Charles Crossland once advised me, with regard to specimens which could not at the moment be identified, 'Make drawings, put them aside and wait; they will clear up sooner or later.' I regret that in the present instance I did not wait long enough, for about the same time as the publication of *E. reticulata*, Dr. F. K. Sparrow published an account of the same fungus under the name *Myrophagus ucrainicus* (Wize) Sparrow in *Mycologia*, XXXI (1939), p. 443. It appears that the late Professor Thaxter collected this fungus in a dipterous pupa in America many years ago, and, not being able to identify it with any known species, made drawings and put them and the specimen aside. Dr. Sparrow found these in Thaxter's herbarium, and recognised the fungus as *Olpidiopsis ucrainica* Wize, which was described by Wize in 1905 from a specimen in the larva of a beetle in Russia. It is difficult to identify entomogenous fungi which were described in Russia years ago, as the literature is often inaccessible and the available translations are usually fragmentary and inadequate. Sparrow decided that the fungus was not an *Olpidiopsis*, and instituted for it a new genus, *Myrophagus*. It now stands as *Myrophagus ucrainicus* (Wize) Sparrow (Chytridiaceæ). It has not been previously recorded for this country.

The spores are yellow or pale brown, spherical, 44-84 μ diameter, ornamented with a wide-meshed network of narrow ridges. Each spore is at first enclosed in a hyaline, thin-walled cell, from which it is readily expelled by pressure.

DETRITAL ZIRCON

J. A. BUTTERFIELD

ZIRCON is a common accessory mineral in igneous rocks, particularly those of the more acid felspathic types and of the kinds derived from magmas rich in soda, such as granites, diorites, syenites, etc. It occurs also in granular limestones, gneisses, schists, and occasionally in volcanic rocks. While it never occurs in great amounts or in large masses, it has a wide distribution and this is reflected in the great frequency in which zircon occurs as a detrital mineral in sedimentary rocks. Zircon is to be found among the heavy minerals of most sedimentary rocks and in some it is by far the most prevalent mineral, especially in the finer grades. In the cooling of a magma, zircon is one of the earliest minerals to crystallise out and thus zircon crystals usually present a good crystal outline. Although such crystals may reach a fairly large size in rocks such as pegmatites, they are generally small and this accounts for the large number of small, well-shaped crystals which are such a common feature of the heavy residues from some sandstones.

Apart from its wide distribution, certain other factors tend to account for the relative frequency of zircon as a detrital mineral. In the first place, zircon normally possesses a hardness of 7.5, which gives it the power of scratching glass and renders it particularly resistant to mechanical attrition, possessing a power of resistance greater than quartz. Secondly, its chemical composition renders it comparatively immune to the action of acids. Although zircon does suffer slight solution, as is shown by the etched zircons in residues from some sandstones, it is normally unaffected by the ordinary acids concerned in rock weathering. Thirdly, cleavage in zircon is very poorly developed and a zircon crystal will therefore suffer irregular fracture but will usually resist any splitting along cleavage planes within the crystal. Many otherwise resistant minerals suffer serious disruption owing to their tendency to split easily along such cleavage surfaces, but this is not a feature of zircon. Finally, the crystallographic form which the zircon usually takes, namely the stumpy prism with pyramidal terminations showing a great development of faces, yields very quickly, as a result of mechanical abrasion, the egg-shaped form which appears to be the most resistant form of a mineral grain, and contrasts with those minerals which crystallise in long rods or in flakes, or break easily along cleavage surfaces and are subject to very serious attrition before such a resistant stage is reached. Because of all these features, zircon is a very persistent mineral, outliving many of its associates and often passing from one rock to another

through succeeding cycles of erosion and deposition and accumulating to such an extent that it may form practically the whole of the heavy mineral residue.

Zircons take on many crystallographic forms, all variants of the simple tetragonal prism with pyramidal terminations. They also vary greatly in colour. Zircon, therefore, yields a good assortment of varieties, and a study of detrital zircon in the heavy residues from sediments makes it possible to classify zircon grains into certain well-defined varieties. A careful study of these varieties is essential in comparing sediments. If correlation by heavy minerals is the object in view, it is becoming increasingly clear that, except in the most obvious cases, such correlation will probably ultimately depend on a comparison of mineral varieties as distinct from species. It is therefore important that workers in sedimentary petrology should attempt a systematisation of mineral varieties with a corresponding nomenclature. The following is a simple classification of the common types of zircon met with in sedimentary work. Most of these types can be found in the Carboniferous sandstones of Yorkshire, in which zircon is particularly prolific. The basis of the classification is three-fold, depending on (a) the colour of the grain, (b) the original crystallographic form, and (c) the degree of rounding. Added to this are a number of unusual forms of zircons which, if present, must form a useful aid to correlation.

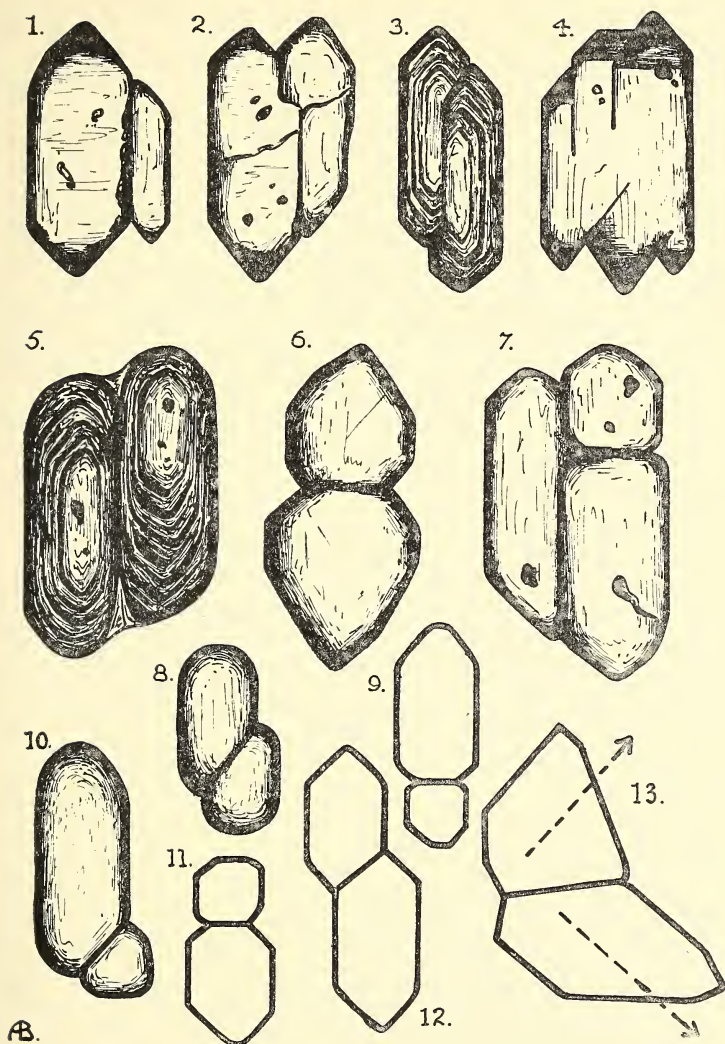
I. COLOURLESS ZIRCON.

Colourless and waterclear. Occurs in the following sub-varieties :

- (a) EUHEDRAL.—(i) *Simple*.—Medium length prism normally of first order with faces (110), terminated by corresponding pyramid with faces (111).
- (ii) *Complex*.—Similar to simple type but with development of further faces, e.g. a steeper pyramid (331), a ditetragonal bipyramid (311), prism faces of second order (100), basal pinacoid (001), etc. It is important to specify the nature of the modification.
- (iii) *Acicular*.—Similar to either of the above, but the length of the prism considerably exceeds the width, say by more than five times.

(b) SUBANGULAR.—Any of the above types that have suffered wear with the result that the edges are rounded, but the faces still obvious.

(c) ROUNDED.—Any of the above types that have suffered sufficient rounding to obscure all signs of faces. The final product is usually an egg-shaped grain which becomes highly



Illustrations of parallel growths in detrital zircon. All the examples are from Yoredale sandstones taken from Upper Yoredale and Upper Wharfedale. All the grains are of the colourless variety except No. 5 which is of the purple type. The long dimension of each grouping is as follows:

1. 0.08mm.	2. 0.18mm.	3. 0.12mm.	4. 0.08mm.
5. 0.1mm.	6. 0.09mm.	7. 0.15mm.	8. 0.09mm.
9. 0.18mm.	10. 0.16mm.	11. 0.15mm.	12. 0.1mm.
	13. 0.1mm.		

resistant to further wear and may persist through several cycles of erosion and deposition, passing from one formation to another.

(d) **IRREGULAR (Broken).**—Any of the above grains may fracture at any stage and produce broken pieces showing conchoidal fracture and irregular shape.

(e) **ZONED.**—The euhedral or subangular types may show zoning. This is an internal banding parallel with the faces of the crystal, caused probably by layers of dust-like inclusions lying at various depths and forming dark concentric layers within the crystal, or by lamination (Brammall. 'Dartmoor Detritals,' *Proc. Geol. Ass.*, 1928). When such crystals are subjected to wear, the skins seem to flake off, producing smaller crystals, but tending to retain their euhedral or subangular outline.

All the above forms are exceedingly common in sediments and have been described by many writers. Occasionally these colourless zircons possess a faint bluish or greenish shade, but seldom so strong as to create a separate colour grade.

II. PURPLE ZIRCON.

Described by Dr. Mackie ('Source of Purple Zircons in Sedimentary Rocks of Scotland,' *Trans. Edin. Geol. Soc.*, 1925) as derivable from Lewisian Gneiss, and other Scottish rocks, but may have a more varied source. Two types are recognisable in Yorkshire Carboniferous sandstones.

(a) **PURPLE.**—Often relatively very large, usually well rounded, but rarely showing good crystal outline. When euhedral the common form seems to be the simple tetragonal prism with corresponding pyramid faces, but other faces are occasionally developed. Small clear grains of this variety would be better described as pink and in some cases they become almost colourless. Occasionally they are slightly pleochroic and sometimes they appear finely polished as if by wind. Sometimes they possess a dark centre or colour of varying intensity. Zoning is very rare and ill-defined. This is the type referred to by Mackie and is not typical of granites, but rather of metamorphic rocks. Such purple zircons occur in the following sub-varieties :

- | | |
|-----------------|-----------------|
| (i) Euhedral. | |
| (ii) Subangular | } Common forms. |
| (iii) Rounded | |
| (iv) Irregular. | |

(b) **REDDISH-BROWN.**—This is a smaller type with a distinct brownish shade and yields more often a good crystalline

form. It also occasionally shows zoning and is almost certainly of origin different from the purple zircon mentioned above. It is typical of granites and is to be compared with zircons described by Brammall from Dartmoor Granites (*Min. Mag.*, 1923). It has been suggested that some of these grains may be xenotime, but the differentiation is difficult without spectroscopic evidence, and even then may be uncertain, owing to the presence within the crystals of inclusions containing yttrium. This occurs in the usual sub-varieties :

- | | |
|-----------------|--------------------------------------|
| (i) Euhedral | } Common forms often showing zoning. |
| (ii) Subangular | |
| (iii) Rounded. | |
| (iv) Irregular. | |

The subject of purple zircons is dealt with by Boswell in his paper 'On the Distribution of Purple Zircons in British Sedimentary Rocks,' *Min. Mag.*, 1927.

III. DUSKY ZIRCON.

In this variety, the colour is best described as dirty brown and is probably due to clouds of dust-like inclusions scattered at random throughout the crystal. Commonly shows zoning and seldom reaches a very large size. Subangular grains most prevalent, but euhedral grains fairly common. Sub-divided into :

- | | |
|------------------|--------------------------------|
| (i) Euhedral. | } Common forms showing zoning. |
| (ii) Subangular. | |
| (iii) Rounded. | |
| (iv) Irregular. | |

IV. YELLOW ZIRCON.

This is usually a large, well-worn type in Yorkshire sediments and varies in colour from the faintest tinge of yellow to a decided primrose yellow. It occurs mostly in well-rounded forms, though rare subangular grains are met with. In the Yorkshire Carboniferous sediments, this variety gives the appearance of age and long transport. Sub-divided into :

- | |
|------------------------------|
| (i) Subangular. |
| (ii) Rounded. (Common form). |
| (iii) Irregular. |

This simple classification yields 22 varieties of zircon, which by their colour and form may yield evidence of source, and by their degree of rounding some indication of the amount of attrition they have suffered. This last feature may suggest either (*a*) the distance of transport of the material, or (*b*) the number of sedimentation cycles through which the grains have

passed. The classification may require extending to include varieties found in other sediments than Carboniferous, and in other areas than Yorkshire.

Zircon crystals carry an abundance of inclusions and as an extension of the above scheme of classification, a study of these inclusions should be made, for here is further data which may be of the greatest use in correlation. Among such inclusions are rutile crystals (acicular, stumpy, and irregular), zircon crystals (both acicular, normal, and occasionally zoned), liquid and gaseous inclusions of oval, round, irregular, or vermiform shape, opaque matter (largely iron ores), tubular and spherical glass inclusions, negative crystals, monazite, apatite, quartz, minute flakes of biotite, etc. Often inclusions contain other inclusions within them. Occasionally these inclusions are arranged parallel to the principal axis or in the direction of cleavage, but more often they occur quite irregularly. Often it is impossible to identify the nature of the inclusion, but when the true nature can be decided it should certainly be recorded, since the inclusions vary according to the source of origin of the zircon.

Apart from the above, there are two other features which need to be looked for and recorded in any systematic description of detrital zircons. The first relates to the peculiar outgrowths which are to be observed on the prism faces of the zircons in some residues. The writer has already described examples of these from Yorkshire Millstone Grit (*Geol. Mag.*, Nov., 1936), and Dr. Smithson has recorded similar outgrowths on zircons from Yorkshire Jurassic rocks (*Geol. Mag.*, June, 1937). There is no need to repeat the descriptions here, but their associations are interesting and should be looked for. The outgrowths are apparently authigenic, consisting of secondary zircon deposited on the original crystal, they are found in estuarine deposits, and, so far as the writer's experience goes, always in association with authigenic titanium minerals (brookite, anatase), and usually with apatite. They seem to have been formed under special conditions where chemical precipitation has been conspicuously prominent and chemical solution absent. As a direct antithesis to this feature, etched zircons are occasionally to be found in some sediments.

A further feature of interest in detrital zircon and probably of value in correlation, and therefore to be looked for and recorded, is concerned with (a) the occurrence of zircons in pairs, triplets, etc., exhibiting parallel growth or grouping, and (b) twinning. This is a feature of zircon which has not been greatly stressed in descriptions of this mineral in sediments, but many cases have been encountered by the writer in his work on Carboniferous sediments, and Rastall and

Wilcockson record a case in the micro-granite of Threlkeld ('Accessory Minerals of Granitic Rocks of English Lake District,' Q.J.G.S., 1915). The occurrence of zircons in pairs or triplets is not rare in the Millstone Grit and Yoredale sandstones of Yorkshire, and examples of these are illustrated in the accompanying figures. The commonest form is shown in Figs. 1-5. In this case, two or more zircons (usually two) are laid side by side in parallel growth. Usually, the units forming the group vary in size. They may be simply juxtaposed as in Figs. 1 and 5, or they may be more intimately intergrown as in Figs 2 and 3. Mostly they are of the water-clear, colourless type, but occasionally they are zoned, as in Figs. 3 and 5, and rarely they are of the purple type, as in Fig. 5, or of dusky type. Fig. 4 is an example of three zircons in parallel growth. One is tempted to call these assemblages twins or triplets and this would obviously be a good name for them, but they are not actually twins in the strict crystallographic sense. Another type is illustrated in Figs. 6, 9, and 11. These are not so plentiful as the ones mentioned above, but they are equally interesting. In this case the crystals are united together end to end. In this case also, the two units almost always vary in size, and very often vary in crystallographic development. Another variant is shown in Figs. 8, 10, and 12, where the crystals are attached together on pyramid faces. Fig. 7 shows a mixed assembly where two crystals, attached end to end, are united in parallel growth with a third crystal attached along the prism face. Some of these parallel groupings show perfect crystal form, but others become markedly rounded and eventually all traces of such parallel growth become lost. A glance at the index accompanying the figures will show that all these examples are of microscopic size and relate to grains only about one-tenth of a millimetre in length. The writer intends to deal with this interesting feature more fully at some future time.

Finally, there is the question of zircon twins. Twinning in zircon has rarely been observed. Most writers of treatises on crystallography mention twinning in zircon, but give few details. Perhaps one of the fullest accounts is given by Lewis in his 'Treatise on Crystallography' (1899). He relates the first discovery of zircon twins by Herr O. Meyer in 1878, and then describes other records. Such records are, however, few. Zircon crystals are isomorphous with those of rutile and cassiterite and it is to be expected that twins similar to those of these minerals should be found. The records of zircon twins show that when twinning occurs it is in the form of geniculate twins or intercrossing doublets, with the twin face being one of the pyramid faces, usually (101), but more rarely (111), (331), etc. Although the writer has examined many thousands

of detrital zircons he has not found a perfect example of a zircon twin. There are cases of apparent geniculate twins, but they are usually so much worn as to leave a doubt in the mind as to their true nature. Fig. 13 depicts one of the best of these. So far as one can see, this is a twinned zircon. The arrows show the directions of the principal axes of the two portions forming the twin. The angle between these two axes is roughly a right angle and corresponds to a twin along the pyramid face (111). It is reasonable to expect that twinned zircons are present among detrital zircons, and a further search may yield more convincing examples. If present they would form a feature of great value in correlation.

This note has been written to draw attention to the interest attached to detrital zircon, an interest pointed out by many previous writers. As Alan B. Dick pointed out many years ago (*Nature*, 1887), zircon is probably the most ubiquitous of detrital minerals and a wider study of its origin, varieties, etc., would be of the greatest use to sedimentary petrologists. There is a wide field for investigation, especially in regard to the origin of the various types of zircon, for whilst researches have been made in this direction, our knowledge at the moment is scanty. Khrushchov, for instance, attempted to classify zircons into three groups, according to their derivation from granitic, gneissic, and syenitic rocks (cited by Rastall and Wilcockson, *op. cit.*, Q.J.G.S., 1915), and he developed a simple scheme of differentiation, but later workers have put forward objections to this and have even despaired of ever producing such a scheme. But such a scheme of classification of zircon according to its origin is surely not impossible, and simply depends on a wider investigation.

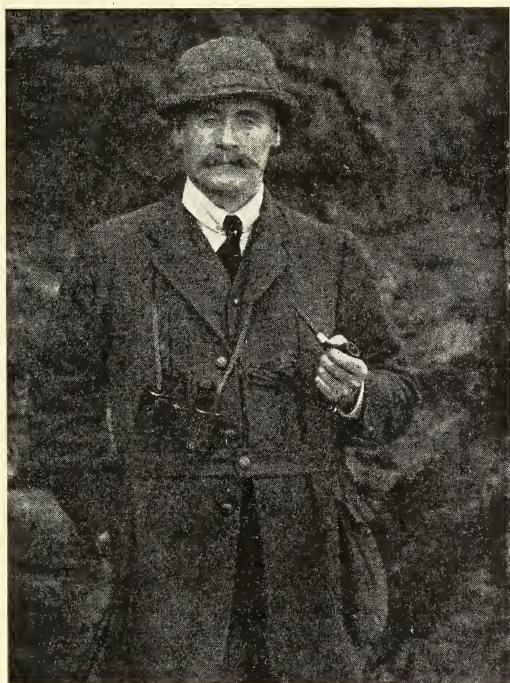
Intimate Sketches from Bird Life, by Eric J. Hosking and Cyril W. Newberry, with an introduction by Julian S. Huxley, pp. xx+104, with 53 plates of photographic illustrations by the authors. Country Life, 5/-. If there could still be any lingering doubts among naturalists as to the scientific value of bird photography, a book such as the one under review should entirely remove all misgivings. If a good ornithologist is a good photographer, he can secure pictures which will record permanently observations of value, yet difficult to describe with mere words. The authors of this book have evidently undertaken their task with ends of this kind in view, and they have produced a noteworthy contribution to ornithological literature. The photographs are very fine indeed, especially the series dealing with the Stone Curlew and the Woodcock. From a mere inspection of the plates one can infer certain characteristic habits which the photos have caught so well. The discussions in the eleven chapters are good reading and all through one feels that the authors have recorded their observations on the spot. The chapter on field work with its detailed descriptions of 'hides' will be most useful to beginners. The frontispiece is a colour photograph of a Kingfisher enlarged from one frame of a 16 mm. Kodachrome cine film. It is on seeing pictures of this kind that many cine enthusiasts decide to abandon all black and white for colour film.

In Memoriam

OXLEY GRABHAM, M.A., M.B.O.U.

1865-1939

To one who knew Oxley Grabham in the days of his prime, when he took an active interest in athletics, sport, and all branches of natural history, it was with a feeling of sadness that one visited him during the many years that he was confined to his bedroom in Thornton-le-Dale. Nevertheless



these visits recaptured something worth while as no incident or experience had been forgotten and the past came vividly to life.

He was the son of Dr. Grabham, of Pontefract, and intended at one time to follow in the footsteps of his father. Educated at Repton and Jesus College, Cambridge, he eventually settled in Thornton-le-Dale, where he was known and esteemed by everybody. Later, when in 1905 he was appointed Curator of the Museum of the Yorkshire Philosophical Society, he moved to York, and perhaps a visit to the house he there occupied will give the truest picture of the man.

To a schoolboy, keen on all to do with animals and birds, what a thrill and privilege it was to visit this house during

the holidays. Volumes from shelves well stocked with books on natural history and sport were freely lent and duly returned. In a glass case reposed the numerous medals won at his public school and college for running and jumping, together with even more impressive mementoes of the inter-varsity sports, including the much-prized Victor Ludorum Trophy. He was a double blue and a fine amateur boxer into the bargain.

This, however, was only a beginning, for the walls of another room, which served as his den, were completely hidden by cases of rare Yorkshire birds, most of which he had himself mounted. Other cases contained a fine collection of fresh-water fish, many of which he himself had caught. In a series of cabinets were a fine collection of the skins of British mammals, and in jars and bottles could be seen snakes and lizards of various kinds. A series of albums contained a remarkable series of photographs of Yorkshire birds, mammals, fishes, field sports, and subjects of archæological interest. Small wonder that the youthful naturalist returned home walking on air and looking forward ardently to the next visit.

With what certainty, too, he could be relied on to reply encouragingly to schoolboy letters, and how the Museum came to life and the York and District Field Naturalists' Society reached its zenith. Many of the older members of the Vertebrate Section of the Yorkshire Naturalists' Union will remember his period of Presidency of the Section (1911 and 1912) and the excellent illustrated addresses that he gave from time to time.

And then later what a delight it was to spend a week-end with him on the Yorkshire Moors, where every plant, animal, bird, or ancient memorial yielded its secrets, for he was an authority on so many subjects and we have not yet mentioned Yorkshire pottery, ancient burials, old buildings, and all to do with the Roman occupation. At one time his photographs and writings were to be found in most publications devoted to these subjects.

Most of his collections are now in the Yorkshire Museum, and his mortal remains repose in the ancient and beautifully situated graveyard at Ellerburne, a district that he loved to visit.

E. W. T.

NEWS FROM THE MAGAZINES

The Entomologist's Record for January contains 'Lepidoptera at Nevache, Hautes-Alpes, from July 28th-September 4th, 1938,' by W. Fassnidge; 'A Note on *Saturnia pavonia* L.,' by P. B. M. Allan; 'Two new Aberrations of British Beetles,' by H. Donisthorpe; 'Some Aculeata of Easton,' by T. F. Marriner; collecting notes and current notes; and supplement, 'The British Noctuæ and their Varieties,' by H. J. Turner.

THE 1939 FUNGUS FORAY AT GILLING, RICHMOND

JOHN AND JENNIE GRAINGER

THE Annual Foray of the Mycological Committee of the Union was held in the village of Gilling West, near Richmond, from September 2nd to 6th. Shadows of an impending war materialised during the meeting, lowering the attendance and curtailing the collections, but some useful ecological and recording work was nevertheless accomplished. Stress of circumstances suggested the continuity of the Committee by the re-election of all the officers and members at the Annual Meeting held at the Angel Inn on Saturday, September 2nd. The Chairman of the Committee later spoke on the 'Ecology of Fungi' and dealt particularly with the distribution of the larger Agarics in relation to the relative acidity (pH) of the substrata.

Though there are considerable woods in the area under investigation, a considerable number of the species were found upon the numerous pastures which occur between the woodland. Large numbers of the beautiful *Hygrophorus calyptræformis* were found in Hartforth pastures. The pileus of this species is like an old-fashioned candle extinguisher, of waxy bloom, and of a most pleasing rose pink colour. It favours pastures of moderate acidity, about pH 5.0-5.5, like other species of the same genus. Another notable species, found on the pastures near Aske Hall, was *Amanitopsis nivalis*, which could be named without error by its snowy colour, striate margin, its volva, and its clean stem without a ring. *Panæolus acuminatus* was another outstanding kind, the only *Panæolus* with a really conical, black, pileus.

The following records have been compiled with valued assistance from Mrs. Grainger, Mr. J. W. H. Johnson, and Miss Chloe Johnson.

* New to V.C. 65.

† New to Yorkshire.

MYXOMYCETES

Physarum cinereum Pers.*

Lycogala epidendrum Fr.

PHYCOMYCETES

Phytophthora infestans (Mont.) deBary.

ASCOMYCETES

Eurotium herbariorum (Wigg.)
Link.

Claviceps purpurea (Fr.) Tul. on
Dactylis glomerata.

Helotium claro-flavum Berk.*

Venturia inæqualis (Cke.) Aderh.

Stegia Ilicis Fr.

Rhytisma Acerinum (Pers.) Fr.

Xylaria Hypoxylon (Linn.) Fr.

BASIDIOMYCETES

USTILAGINALES

Ustilago Avenæ (Pers.) Jens.

1 Mar. 1940

UREDINALES

Puccinia Poarum Nielss.*Puccinia suaveolens* (Pers.) Rost.

AGARICALES

Amanita rubescens (Pers.) Fr.*Clitocybe infundibuliformis* (Schæff.)*Amanitopsis vaginata* (Bull.) Roze.Fr. var. *membranacea* (Fl. Dan.)*A. nivalis* (Grev.) Rea.†

Fr.*

Russula nigricans (Bull.) Fr.*Laccaria laccata* (Scop.) B. et Br.*R. cyanoxantha* (Schæff.) Fr.*Entoloma jubatum* Fr.*R. atropurpurea* (Krombh.) Maire.*E. sericeum* (Bull.) Fr.*Collybia butyracea* (Fr.) Bull.*Bolbitius titubans* (Bull.) Fr.*Androsaceus androsaceus* (Linn.)*Crepidotus mollis* (Schæff.) Fr.

Pat.

Psalliota campestris (Linn.) Fr.*Lactarius ichoratus* Batsch.*Stropharia merdaria* Fr.**L. subdulcis* (Pers.) Fr.*S. semiglobata* (Batsch.) Fr.*Hygrophorus pratensis* (Pers.) Fr.*Panæolus phalænarium* Fr.*H. niveus* (Scop.) Fr.*P. campanulatus* (Linn.) Fr.*H. ceraceus* (Wulf.) Fr.*P. acuminatus* Fr.†*H. conicus* (Scop.) Fr.*Coprinum comatus* (Fl. Dan.) Fr.*H. calyptræformis* Berk.*C. niveus* (Pers.) Fr.*H. chlorophanus* Fr.*C. micaceus* (Bull.) Fr.*H. psittacinus* (Schæff.) Fr.*Boletus chrysenteron* (Bull.) Fr.*B. radicans*.†

APHYLLOPHORALES

Polyporus hispidus (Bull.) Fr.*Stereum sanguinolentum* (A. et S.)*Fistulina hepatica* (Huds.) Fr.

Fr.

Irpex obliquus (Schröd.) Fr.*S. hirsutum* (Willd.) Fr.*Stereum rugosum* (Pers.) Fr.*Clavaria vermicularis* Fr.

AURICULARIALES

Auricularia auricularia-Judæ (Linn.) Schroet.

CALOCERALES

Calocera cornea (Batsch.) Fr.

GASTEROMYCETALES

Lycoperdon giganteum (Batsch.) Pers. *Lycoperdon perlatum* Pers.

FUNGI IMPERFECTI

Polythrincium Trifolii Kunze.

The Transactions of the Society for British Entomology, Vol. VI, Part 5, consists of 'Insects associated with cultivated forms of *Rubus*,' by G. H. L. Dicker; Vol. VI, Part 6, 'The occurrence of Spermatophores and their Measurements in some British Lepidoptera,' by J. L. Williams (with figs.); and Vol. VI, Part 7, 'A contribution towards an ecological survey of the aquatic and semi-aquatic Hemiptera Heteroptera (Water Bugs) of the British Isles,' by E. J. Pearce and G. A. Walton. *The Journal of the Society*, Vol. II, Part 1, contains numerous interesting articles, including 'Notes on the migration of some aquatic insects,' by T. T. Macan; 'An addition to the list of British Ephemeroptera,' by D. E. Kimmins; 'A contribution to the biology and distribution in Great Britain of *Boreus hyemalis* L. (Mecopt. Boreidæ),' by E. W. Aubrook; 'Insects bred from stumps of *Salix viminalis* L.,' by E. McCallan; 'A few ants taken in Derbyshire,' by B. D. W. Morley; 'Two water bugs new to Great Britain, *Microvelia pygmaea* Duf. and *M. umbricola* Wrob. (Hemipt.),' by G. A. Walton (with plates); and 'Empididæ (Dipt.) and the flowers of *Orchis elodes* Godfery,' by D. E. Kimmins (with plate).

THE VEGETATION OF YORKSHIRE AND SUPPLEMENT TO THE FLORAS OF THE COUNTY

(Continued from page 328, Dec., 1939)

Scirpus fluitans L.

S. compressus (L.) Pers. (*Blysmus*).

Eriophorum latifolium Hoppe.

Further localities are : Filey Undercliff, J.F.R. ; Thornwick Cove and Keldy Slopes ! ; Cowside Beck, Arncliffe, J.F.P. ! ; Dibscar Glen, H. E. Craven in Hb. Bradley ! ; Kettlewell, S. Margerison ! ; Thorn Waste, E. A. W.-Peacock (*Nat.*, 1905).

E. angustifolium Roth.

E. vaginatum L.

Rhynchospora alba Wahl.

Not in East Riding Flora.

Schoenus nigricans L.

Additional localities are Austwick Moss, W. West (*Nat.*, 1908) ; Head of Crummockdale, A.W., m.s. ; Norber Sike, C.A.C. ; Sawley Abbey, Y.N.U. excursion, 1893 (*Nat.*, 1894) ; Yeadon Moor, C. P. Hobkirk, m.s., 1898 ; Askern, 1900, H. H. Corbett, sps. ! Queen Mary's Dub, Ripon, Y.N.U. excursion, 1939 ; Kelleythorpe Marsh, Drifffield (*Y.N.U. Circ.* 145, 1899) ; seen there, July 1939, W.A.S.

Cladium Mariscus R.Br.

Not in East Riding Flora. An additional site is Eel-mire Bog near Kilgrim Bridge, Jervaulx, 1902, W. A. Thwaites (spn. to J.F.P. !).

Kobresia bipartita (Bell.) Dalla Torre (*Elyna caricina*).

Only in the Cronkley Fell area.

Carex Pseudo-Cyperus L.

At Meaux Abbey in East Riding, J. J. Marshall (*Nat.*, 1914, p. 6). Other additional records : ditch between Hatfield-Woodhouse and the Chase, H.H.C., 1898 ! ; dyke leading to Thorne Moor from town, Y.N.U. meeting, 1907 (*Nat.*, 1907, 317) ; pond near Pollington, Snaith, 1885, P.F.L. through A. R. Waller in Herb. C.W. ! = Balne Pond, 1882, P.F.L. Herb.

C. riparia Curtis.

C. acutiformis Ehrh.

C. vesicaria L.

forma *pendulina* Blytt., noted in Wharfe, Don, and Aire.

hyb. *Pannewitziana* Figg. (*vesicaria* × *inflata*), noticed by

me in 1884 at Hawes in Yore backwater and called *robusta* Sond. Adel Dam, 1933, W.A.S.

var. or hyb. *involuta* Bab. Two spns. from J. Cryer, wet ditch near river at Conistone and another from 'the Sticker' near Grassington.

Carex inflata Huds. (*rostrata* Stokes, *ampullacea* Good.).

var. *brunnescens* Anders. Head of Balderdale in Lune-Tees, G. C. Druce, 1909.

C. lasiocarpa Ehrh. (*filiformis* L.).

Other records are : east fringe of Skipwith Common (Rep. Rec. Club, 1879, p. 74) White Mere on Hutton Moor ! (Slater) [now extinct as the mere is drained, W.A.S.] ; Austwick Moss, Dr. W. H. Pearsall ; Askham Bog, east end, 1930, W.A.S. ; Tarn Moss, Malham, 1936, W.A.S. It rarely flowers—not one stem in a hundred ever showing fruit.

C. hirta L.

var. *ebracteata* Syme. Not uncommon, but a state rather than a constant form.

var. *spinosa* Mort. Horbury Bridge willow garth, and by canal east of Mirfield ! P.F.L. (1905-10) ; Kirkstall by canal !

var. *hirtiformis* Pers. By the stream in Ouldray Gill, Helmsley, in 1870 ! F.A.L. cum W. Todd.

C. pendula Huds.

Some other localities are below Fober and Whitewell, J.F.P. ; by Adel Brook at Meanwoodside ! Rivelin Valley, A. E. Bradley ; Wharfe bank, Ilkley, A.W. m.s. ; Elland Park Wood, W. B. Crump (*Flo. Hfx.*, 119) ; riverside below Burton-in-Lonsdale, Y.N.U. excursion, 1935.

C. sylvatica Huds.

var. *capillariformis* Mihi., *Nat.*, 1909, p. 351, Woodkirk ! P. F. Lee, 1909.

C. strigosa Huds.

No record from the East Riding. Canon Fowler sent a specimen from Heppenstall Eaves, June, 1895 ! Ecclesall Wood, Sheffield, 1931, J. M. Brown ; still at Hackfall in 1924, W.A.S. ; Newbiggin wood, Whitby, spn. seen ! Bernard Reynolds ; still in Forge Valley, C. M. Rob and W.A.S., 1936.

C. helodes Link. (*lævigata* Sm.).

Not in East Riding Flora.

C. capillaris L.

Not known in East Riding. The Gordale station was confirmed in 1939 by G. A. Shaw, of Shipley. A further station in the North Riding and beyond Teesdale is Dodd Fell on the stony cherty denuded patch overlooking Cam at 2,100 ft. or so.

Carex binervis Sm.

Not in East Riding Flora.

C. distans L.

C. fulva Host.

C. fulva × *lepidocarpa* (× *C. Leutzii* Asch. and Graeb.)

Queen Mary's Dub, Ripon, 1938, Miss C. M. Rob (confirmed by E. Nelmes).

C. lepidocarpa Tausch.

Not listed by Lees but it appears to be well distributed in Yorks. I have it, very fine, from Aketon, nr. Follifoot and Salt Lake, Ribbleshead (see Rep., B.E.C., 1934, p. 992), W.A.S.

C. flava L.

C. Oederi Retz.

Shewn to me by Dr. H. F. Parsons upon Skipwith Common. Semmerwater, 1939, W.A.S., the var. *elatior* Anders.

C. extensa Good.

Not in West Riding Flora.

C. digitata L.

No record for East Riding.

C. ornithopoda Willd.

Has not been regathered in the only station near Ripon.

C. caryophyllæ Latour. (*C. verna* Chaix. *præcox* Jacq.).

C. pilulifera L.

C. flacca Schreb. (*glaucia* Scop.).

C. pallescens L.

Not in East Riding Flora, but since found at Beverley by J. J. Marshall, and at Bubwith, C. M. Rob, on Y.N.U. excursion, 1937. I also saw it at Thorpe near Rudstone in 1910.

C. panicea L.

C. limosa L.

Not in East Riding Flora, and no recent record from West or North Yorkshire.

C. elata All. (*stricta* Good. *Hudsonii* Ar. Ben.).

For North Riding see A. Bennett, *Nat.*, 1895, pp. 271-2, on a specimen from Carperby. I have also seen little colonies of growths identical with the Carperby one in the not-regularly-present moor tarns on Fleet Moss, Stake, Widdale, and Dodd.

Carex gracilis Curt. (*C. acuta* Auct.).

C. Goodenowii Gay.

C. rigida Good.

Not in East Riding Flora.

C. elongata L.

An additional station (and the only one in Yorkshire in which the plant is now known to grow) is Askham Bog, *Nat. Hist. Jour.*, 1892, 79, Le Tall and Fryer. Refound by W.A.S. in 1936. Extinct in V.C. 63 and V.C. 61.

C. leporina L. (*ovalis* Good.).

C. echinata Murr. (*stellulata* Good.).

C. remota L.

C. canescens L. (*curta* Good.).

The East Riding Flora omits it, but I saw it in 1909 between Stamford Bridge and Escrick.

C. vulpina L.

var. *nemorosa* (Rebent.), Lej. Bubwith, Y.N.U. Excursion, 1937.

C. contigua Hoppe.

C. divulsa Stokes.

C. paniculata L.

C. paradoxa Willd.

Plentiful with the following in Tarn Moss, Malham, W.A.S.

C. diandra Schrank (*teretiuscula* Good.).

Additional localities are Austwick and Lawkland Mosses. Plentiful in Tarn Moss, Malham, W.A.S. Kelleythorpe Marsh, Driffild (*Y.N.U. Circ.* 145, 1899); still there (1939), W.A.S.

C. disticha Huds. (*intermedia* Good.).

var. *longibracteata* Schleich, Tarn Moss, Malham, W.A.S.

C. arenaria L.

Not in West Riding Flora.

C. brizoides L.

Alien, no other record than Studley.

C. divisa Huds.

Not in North Riding Flora. Easington, A. K. Wilson, 1939.

C. pauciflora Lightf.

Only in North Riding, at Lilla Cross.

Carex pulicaris L.

C. dioica L.

GRAMINACEÆ

Panicum miliaceum L. Pers., *P. capillare* L., *P. Crus-Galli* L.,
P. colonum L., *P. glabrum* Gaud. (*Digitaria humifusa* Pers.),
Setaria viridis (L.) Beauv., *S. glauca* (L.) Bv., *S. verticillata*
(L.) Bv., *Zea Mays* L., *Tragus racemosus* (L.) Scop.,
Sorghum halepense (L.) Pers.
Have occurred as aliens.

Phalaris arundinacea L. (*Digraphis* Trin.).

The var. *picta* L. occurs as an alien.

P. canariensis L., *P. brachystachys* Link., *P. paradoxa* L., and
P. minor Retz.

Occur as aliens.

Anthoxanthum odoratum L.

The var. *villosum* Lois., is found occasionally but possibly
an introduction.

A. aristatum Boiss. (*Puelii* Lec. et Lam.).

Alien.

Alopecurus pratensis L.

A. myosuroides Huds. (*agrestis* L.).

Not given in East Riding Flora, but I saw it in 1909 twice
at Mowthorpe, Great Wold Valley, and between Boynton and
Bridlington. Another East Riding locality is Long Riston,
A. Malins Smith (*Nat.*, 1936, 48).

A. bulbosus Gouan.

Not in West Riding Flora.

A. geniculatus L.

A. æqualis Sobol (*A. fulvus* Sm.).

Not in North Riding Flora.

Stipa trichotoma Nees. (*Nassella* Hackel), *Agrostis major* Gaud.,
and *Polypogon littoralis* Trin.

All occurred as aliens at Meanwoodside.

Milium effusum L.

Heleochoa schœnoides Host., and *Phleum subulatum* Asch. and
Graeb.

Have been found as aliens.

Phleum pratense L.

Phleum præcox Jord.

From fields at Kirklington was probably of casual rank.

P. arenarium L.

Not in West Riding Flora.

Agrostis alba L. (**A. palustris** Huds.).

A. tenuis Sibth. (**A. vulgaris** With.).

A. canina L.

A. verticillata Vill., **A. Scabra** Willd., **Polypogon monspeliensis** (L.) Desf., **P. maritimus** Willd., **P. elongatus** H.B.K., and **P. littoralis** Trin.

Are aliens which have been seen.

Calamagrostis epigeios (L.) Roth.

Some additional records are : between Hipswell and Iron Bank Wood, Easby, 1906 ! Blackburn-sike Spinney, $\frac{1}{2}$ mile below Hawes, 1884-7 ! Gregory Scar, Grasswood ! Robshaw hole between Tadcaster and Newton Kyme, 1910 !, and hedge bank between Sowerby and Dalton, Miss C. M. Rob.

C. canescens (Wigg.) Druce (**C. lanceolata** Roth.).

Another locality is Bishop's Wood, Hambleton ! (ditch near centre by the main drive). Still at Potteric Carr, Y.N.U. Excursion, 1937.

Deyeuxia silvatica (Kunth.), (**Calamagrostis silvatica** Besser.),

D. retrofracta Kunth., and **Apera intermedia** E. Hackel.

Alien occurrences.

Gastridium ventricosum (Gouan) S. and T.

An unexpected alien found on the outskirts of Stapleton Park Woods, Wentvale, by Miss C. M. Rob, Y.N.U. Excursion, 1937.

Apera Spica-venti (L.) Beauv.

A. interrupta (L.) Reichb.

Flixton, near Scarborough, in sand pits, A. I. Burnley and E. C. Horrell, 1916. Still there, W.A.S., 1938.

Ammophila arenaria (L.) Link.

Not in West Riding.

Aira caryophyllea L.

A. praecox L.

Deschampsia cæspitosa (L.) Beauv.

D. flexuosa (L.) Trin.

Deschampsia setacea (Huds.) Hackel.

Found on peaty-sandy Derwentland and North Burton !
Wold Valley, 1909, also Skipwith Common, H. S. Thompson,
1903 (teste J. F. Robinson) ; Pilmoor, C. M. Rob.

Holcus mollis L.

H. lanatus L.

Trisetum flavescens (L.) Beauv.

Avena fatua L., *A. strigosa* Schreb., *A. sativa* L., and *Secale
cereale* L.
Crop relics.

A. pratensis L.

A. pubescens Huds.

Arrhenatherum elatius (L.) M. et K.

Chloris compressa DC., *Eleusine indica* Gaertn., *E. coracana* L.,
Panicastrella (*Echinaria*) *capitata* (L.) Moench., and *Cynos-
surus echinatus* L.
Are all aliens which have been noted.

Cynosurus cristatus L.

Sieglingia decumbens (L.) Bernh. (*Triodia*).

Phragmites vulgaris (Lam.) Crep. (*communis* Trin.).

Sesleria cærulea (L.) Ard.

Not in East Riding Flora.

var. *luteoalba* Opiz. is not uncommon.

Koeleria gracilis Pers. (*cristata* Auct.).

Molinia cærulea (L.) Mœench.

Catabrosa aquatica (L.) Beauv.

Eragrostis major Host. (*E. cilianensis* Vig.-Lut.).

Occurred on Frizinghall Sewage waste to F. Rhodes, 1909 ;
and *E. pilosa* Beauv. at the Olympia Sidings, Selby, to W.A.S.,
1934.

Melica montana Huds. (*nutans* L.).

Melica uniflora Retz.

Dactylis glomerata L.

Desmazeria loliacea (Huds.) Nyman (*Catapodium*, *Schlerochloa*).
Not in West Riding.

Briza media L.

The var. *albida* Lej. is frequent.

Poa pratensis L.

P. trivialis L.

P. nemoralis L.

P. compressa L.

P. alpina L.

Only in West Yorkshire.

P. annua L.

Glyceria aquatica (L.) Wahl.

G. fluitans (L.) Br.

G. plicata Fr.

Askern bog, C. W. (Y.N.U., 1906). By Clitheroe roadside above Windgates, J.F.P. ! Some of the spns. are rather *pedicellata*-like.

G. declinata (Breb.).

Wet lane near Cocket Moss, C. E. Salmon ; Lane to Gormire, W.A.S. ; Shipley Glen, G. A. Shaw, 1939.

G. distans (L.) Wahl.

An additional record. Roadsides near Scarcroft Old Hall and Branham, abundant 1905-7, A. E. Bradley !

G. festuciformis Heyn.

Casually found by Mr. C. Waterfall, 1907-8, on sandy muddy ground at Hull !

G. matitima (L.) Mert. et Koch.

G. Borreri Bab.

No other record than that in North Yorkshire Flora.

G. procumbens Dum.

North Landing, Flamborough, A. Malins Smith (*Nat.*, p. 48, 1936).

Festuca rigida (L.) Kunth. (*Sclerorchloa rigida* Link. and Bv.).

F. gigantea (L.) Vill. (*Bromus*).

F. arundinacea Schreb.

Only given in East Riding Flora, but I have noted it at Teesmouth, Eston and Lythe, Whitby ! Plentiful by Ouse below Goole, W.A.S., 1937.

F. elatior L.

(*To be continued*)

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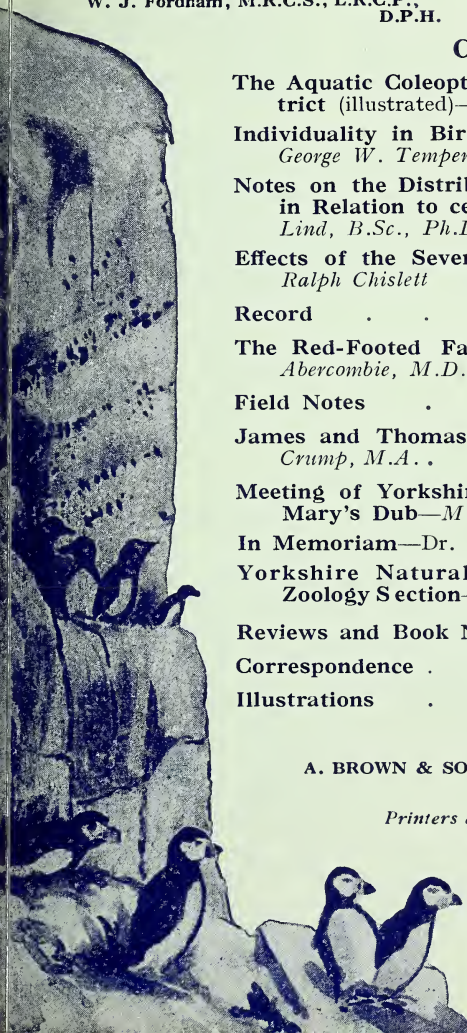
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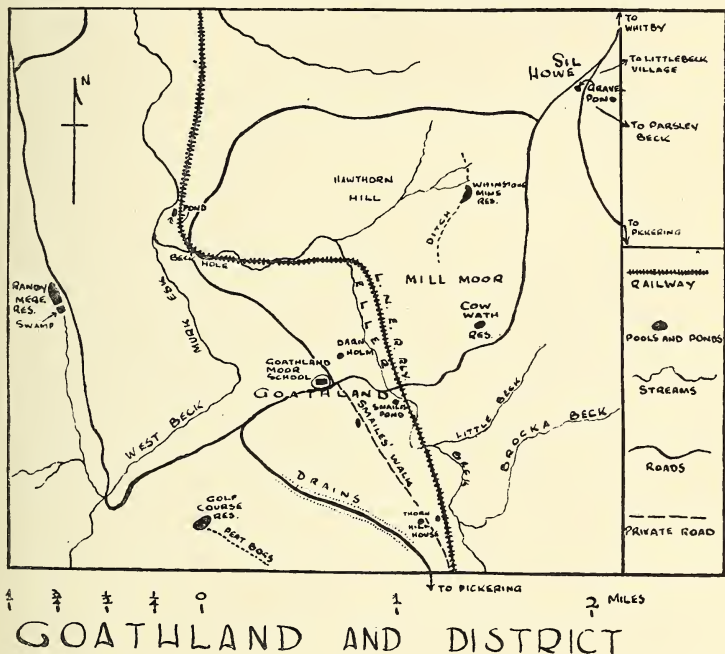
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THE AQUATIC COLEOPTERA OF THE GOATHLAND DISTRICT

RAYMOND R. U. KAUFMANN

A LIMITED amount of literature of the Coleoptera of the Goathland district is available and it includes a few notes on the aquatic life. Of this, H. Britten's papers are the most illuminating, although only references to some of the rarer water beetles are made. There does not, however, appear to



be a published list for this area, and it is in order to augment our knowledge of the regional distribution of the Aquatic Coleoptera that the following notes have been prepared. The list does not pretend to be inclusive, but it does cover a full season's very intensive netting in the waterways of the district, and may perhaps serve as a basis for a more complete survey of the water beetle fauna for this part of the Vice-County.

A perusal of the published records shows that a number of species, such as some of the Haliplids captured by the Rev. E. J. Pearce, some Hydroporids, *Dytiscus semisulcatus* Müll., and a very few Palpicornia remain to be recorded from Goathland: there is no strong reason for supposing that they will not turn up eventually in this neighbourhood, though it must be remembered that those records embrace a very wide

area indeed. A review of the appended list, and bearing in mind the restricted boundaries imposed, does not offer grounds for dissatisfaction, and more than makes up for such disappointments as the failure in the protracted search, to quote an example, for *D. semisulcatus*, an insect which has eluded my notice for many years now.

Dr. W. J. Fordham very kindly supplied me with a manuscript list of the species so far taken in North-East Yorkshire (V.C. 62), and this has been of the greatest use. To Professor F. Balfour-Browne, who has checked the determination of most of the captures made, cordial thanks are extended for his invariable courtesy and help. Grateful acknowledgement, too, is made to Mr. G. B. Walsh, who suggested and supplied sources of literary information, to Dr. K. G. Blair, who confirmed my identification of *Agabus bipustulatus* Linn., v. *solieri* Aubé, and to my friend and colleague, Mr. A. H. H. Stow, who has prepared the attached map and who accompanied many of the fishing expeditions.

The area shown in the sketch was made from Bartholomew's 1935 Half-inch Edition (Sheet G3, Eng. 7a), the One-inch Popular Ordnance Survey (1925, Sheet 16), and a locally-printed Tourists' Walking Map (1½-inch scale). Some difficulty has been experienced in the choice of local place names; these vary to some extent on all three maps, but preference has been given to those used in the Popular Ordnance, and they have been implemented where necessary with localities given in the other two maps.

Of the 87 Hydradeephagous species recorded in the Yorkshire Naturalists' Union Vice-County List, supplied by Dr. Fordham, 42 have occurred here to date, that is, 48.2 per cent. The Hydrophilidæ, however, are very poorly represented—a state equally applicable to the Pannal Ash fauna, described in last May's issue of the *Ent. Mon. Magazine*. Nevertheless, while much remains to be done, the total for a season's collecting is most encouraging, and seems to confirm the opinion that Goathland is a rich centre for Coleoptera in general.

Before proceeding to the list of captures and their records it is necessary to add that netting has been confined to the immediate surroundings of the village. Occasional outings in the directions indicated have been made, but a number of stretches of water naturally remain to be swept. The nature of the district results in an abundance of streams and drainage ditches, and there is ample opportunity for work here without travelling farther afield. Insomuch as the two main streams are concerned, the Eller Beck, which varies in depth and has a stony, sand-lined bottom, has been systematically dragged between Darnholm and the railway station and between the

latter and the Brocka Beck junction; and again, farther south between Thornhill House and the main Pickering-Whitby road. The Murk Esk has received little attention, principally because it lies in a deep ravine difficult of access. There remains, needless to say, a number of marked streams which have had no attention at all. Many of those lying on either side of the Goathland Golf Course and to the North-East are unnamed and not shown on any of the smaller scale maps. Details of captures made in those which have been explored will be found appended.

The larger stretches of water include Foul Syke, lying some four or five miles to the east and on account of its inaccessibility as yet unvisited; Randy Mere Reservoir, which proved most disappointing in many respects; Foster Howe Rigg, still untouched; and the natural reservoir, dammed in a small valley next to the Golf Course. Though this latter has peat moss as its principal growth, practically nothing of interest has been taken from it, but on its south-western aspect, where an overflow pipe empties into a very small iron spring pool—this measures as little as eighteen inches across in dry weather—life abounds! Peat moss is, indeed, the main vegetation in all the deeper moorland pools, and in the peat bogs themselves forms a very thick and matted bed. These bogs vary in depth from a few inches to many feet, but the shallow pools have proved to be the most stocked.

The cattle pond at Thornhill House has amply repaid work done there, and, in fact, most of the semi-stagnant drinking pools have contained a more representative fauna than the larger reservoirs. The large stream-fed pond near the railway station bears no local name and it has accordingly been described as Smailes' Pond, after the owner's name. In this, in the large lake through which Parsley Beck runs, and in the swamps around Randy Mere Reservoir the vegetation is largely water lilies and water mint, mare's tails and rushes fringing the edges: the fauna is not plentiful. Nothing has been found in the overflow reservoir of the Whinstone Mine. The water flows down from the mine and is so strongly chalybeate that this may be a reason. It is sluiced off, however, at the other end, whence the water passes over a long clay bed across the moor, and here it is quite clear, opening out at places into typical moorland pools: in such spots results have not been unproductive. Negative results were obtained from Brocka Beck, and Little Beck stream contained a meagre fauna.

In conclusion, it is perhaps not out of place to state that 'fishing' has been undertaken throughout the months mentioned, and several hours per day were devoted to each collecting, despite some very bad weather conditions. Fine

days disclosed more interesting insects than wet ones, as was to be expected, and there were occasions when the day's work had very little to show.

The following is the list of water beetles taken during 1939, the months of capture being indicated after the localities :

Family—HALIPLIDÆ

Haliphys fulvus Fabr. Extremely rare. A solitary specimen was swept from deep water under the banks of the Eller Beck in May.

H. ruficollis De Geer. With one exception taken exclusively from stagnant water. Rare during the early months, but becoming fairly common in late summer. Smailes' Pond (May, July, Aug.). A single specimen from a ditch along Smailes' Walk in August, and another from the swamp at Randy Mere. Thornhill House cattle pool (Apl., June, July, Aug., Sept.) ; very common in August.

H. wehnckeii Gerh. This is a rare species, first recorded from Whitby in 1934 by Britten and one whose distribution was extended last year through the efforts of the Rev. E. J. Pearce, who found the insect in grassy pools between Wilton and Guisborough. Single specimens have been taken here from the cattle pond at Thornhill House (Apl., July, Aug.).

H. lineatocollis Marsh. Not a common species, but fairly well distributed in both stagnant and flowing water. Thornhill House (Apl., June, Aug., Sept.). By scraping the vegetation at the banks in the shallow parts of the Eller Beck (May, June, July, Aug.). From a small stream-fed drinking pool in a meadow near Thornhill House (July). Sil Howe Quarry (Aug.), a few specimens in a gravel pond.

Family—DYTISCIDÆ

Laccophilus minutus Linn. This species has turned up occasionally in a number of localities, but seems to be principally restricted to the pond at Thornhill House (Apl., May, June, July, Aug., Sept.) Golf Course Reservoir, Randy Mere swamp (May). Eller Beck (Aug.), one example only. Sil Howe Quarry (July). At its commonest during August and September.

Hyphydrus ovatus Linn. This is a rare insect in the district, and is practically confined to Randy Mere, where it was common in May ; specimens were again observed in August. Smailes' Pond (May), rare.

Cælamбус confluens Fabr. Exclusive to Thornhill House (Apl., May, June, Aug.), where it was quite common in August.

C. impressopunctatus Schall. This species has been found only at Thornhill House and never more than one or two examples occurred on the same day (Apl., May, June, Aug., Sept.).

Deronectes latus Steph. Rather curiously localised in that stretch of the Eller Beck lying between Little Beck junction and the railway station. By scraping vegetation at the banks in May, June (when it became fairly common) and July.

D. elegans Panz. Recorded by Britten in 1935 from Beck Hole, and from other localities in 1936. One specimen occurred in a backwater of the Parsley Beck lake in May. A very rare species.

D. 12-pustulatus Fabr. Rather uncommon in mossy pools branching off the main streams. West Beck (May, Aug.). Eller Beck (May, June, Aug.).

- Deronectes septentrionalis* Gyll. Apparently restricted to the Eller Beck. Single examples occurred in June, July and August by scraping mossy stones in the shallows.
- D. borealis* Gyll. Britten places a number of localities on record for this species. From the Eller Beck, but never common (May, June, July, Aug.). One specimen from Thornhill House (May).
- D. sanmarki* Sahlb., *a. rivalis* Gyll. According to Britten, a localised but common stream inhabitant. In a small, ditch-fed drinking pool along Smailes' Walk, but rare (June, Aug.). Eller Beck (May, June, July, Aug.), increasingly common in the summer months.
- Graptodytes lepidus* Oliv. Confined to Thornhill House (Apl., July, Aug., Sept.) and Smailes' Pond (May, July, Aug., Sept.), and generally rather uncommon.
- Hydroporus tristis* Payk. Fairly widely distributed, especially in pools containing peat moss, and very plentiful in the peat bogs during the early summer months. Golf Course Reservoir (May), very rare. Peat pools (Apl., May, June, July, Aug., Sept.). Thornhill House (Apl.), very uncommon. Eller Beck (June), one example. Mill Moor ditch (May, July). Little Beck village (May), in a gravel pond. Darnholm (July, Aug.), in a swampy cattle pool.
- H. umbrosus* Gyll. This has only been taken on rare occasions, and in single examples. Golf Course Reservoir (May, June). Peat pools (Apl., May, June, July, Sept.).
- H. palustris* Linn. A very common water beetle in the larger stagnant ponds, but rare in the streams and ditches. Smailes' Pond (May, July, Aug., Sept.). Ditches (June, July, Sept.). Cattle pool in Smailes' Walk (June, July, Aug.). Randy Mere (May). Thornhill House, where it was abundant (Apl., May, June, July, Aug., Sept.). Eller Beck (June, July). Sil Howe Quarry (July, Aug.).
- H. rufifrons* Duft. Very rare indeed. A sole example from a peat pool in May.
- H. memnonius* Nic. Local, according to Britten, who gives several places in the Vice-County. Practically confined to small running ditches in the immediate neighbourhood, and never common (June, July, Aug.). Smailes' Walk (June, July). Thornhill House (May).
- H. nigrita* Fabr. Britten describes this as a localised Goathland species. It has been captured over a fairly wide area, but it is not common. Ditches (June). Thornhill House (Apl.). Mill Moor ditch (May, July). Little Beck village (May), in a gravel pond.
- H. pubescens* Gyll. A fairly common species in both running and stagnant water. Ditches (June). Smailes' Walk (June, July, Aug., Sept.). Golf Course Reservoir (May, June). Peat pools, Thornhill House cattle pond (Apl., May, June, July, Aug., Sept.). Eller Beck (June, July). Mill Moor ditch, Darnholm (July, Aug.). Streams on Goathland Moor, small drinking pools, Sil How Quarry (July).
- H. planus* Fabr. Fairly common in stagnant pools, but quite rare in running water. Smailes' Pond, Darnholm (Aug.). Goathland ditches, Eller Beck (June, July). Smailes' Walk (June, July, Aug.). Golf Course Reservoir (Mar., May, June). Peat pools (Mar., May, June, July). Thornhill House (Apl., May, June, July). Small drinking pools (July).
- H. ferrugineus* Steph. Two specimens of this interesting beetle turned up, one in a ditch in June, and the other in the cattle pond in Smailes' Walk during the same month.
- Agabus guttatus* Payk. Fairly common in small ditches and along Smailes' Walk (June, July, Aug., Sept.). One example from a peat pool in July. Eller Beck (May, June). Mill Moor ditch (May, July). Parsley Beck (July).

- Agabus pahnodosus* Fabr. Rather an uncommon species and confined to the immediate district. It seems to prefer ditches. Walsh placed it on record from running water at Pickering in 1937. Smailes' Pond (Aug., Sept.). Ditches (June, Sept.). Smailes' Walk (June, July, Aug.), where it was most commonly found.
- A. didymus* Oliv. Recorded by Walsh from similar localities to the above. It is a rare insect here and taken only singly. Apparently confined to the cattle pond in Smailes' Walk (June, July, Aug., Sept.) and the Eller Beck (May, June), in that stretch between the station and the Little Beck junction.
- A. nebulosus* Forster. Very common in the late summer in stagnant water; rarer, however, during the early months. Some specimens have also occurred in running water. Peat pools (May). Thornhill House (Apl., May, June, July, Aug., Sept.). Eller Beck, Goathland Moor streams (June). Sil Howe Quarry (July, Aug.).
- A. chalconatus*, Panz. Quite well distributed in running and still water. During May it was abundant in the peat bogs on Goathland Moor. In ditches and at Smailes' Walk (July). Peat pools (Apl., May, June). Thornhill House and the Eller Beck (June). Small drinking pools and Darnholm (Aug.).
- A. sturmi* Gyll. Common in most water, particularly in mid-summer. Smailes' Pond (May; July, Aug., Sept.). Smailes' Walk, Eller Beck (June, July, Aug.). Golf Course Reservoir (Apl., Aug.). Peat pools (Apl., June, July, Aug., Sept.). Thornhill (Apl., May, June, Aug., Sept.). Parsley Beck (May, July).
- A. bipustulatus* Linn. A ubiquitous species and generally very common indeed. Smailes' Pond (Aug.). Ditches (June, July, Sept.). Smailes' Walk (June, July, Aug., Sept.). Golf Course Reservoir (May, June). Peat pools and Thornhill House (May, June, July, Aug., Sept.). West Beck (May, Aug.). Eller Beck (May, June, July). Mill Moor ditch (May, July). Parsley Beck (May). Streams on Goathland Moor (June, July, Aug.). Small drinking pools, Hawthorn Hill streams (July). Darnholm, Sil Howe Quarry (July, Aug.).
- A. bipustulatus* Linn., v. *solieri* Aubé. One example of this northern form was taken from a small and rather rusty drinking pool in a meadow close to Thornhill House in July.
- Platambus maculatus* Linn. Except during the early summer months this species has proved to be less common than might have been expected. Only from running water. Smailes' Walk (July, Aug., Sept.). West Beck (May, Aug.). Eller Beck (May, June, July). Little Beck stream (July).
- Ilybius fuliginosus* Fabr. Less common than supposed, but sometimes in some numbers from both still and running water. Smailes' Pond (May, Aug., Sept.). Smailes' Walk (June, July, Aug.). Thornhill House (June, July, Aug., Sept.). Eller Beck (May, July). Parsley Beck (May). Darnholm (July).
- I. fenestratus* Fabr. Very rare. One specimen from the cattle pond at Thornhill House in August.
- I. ænescens* Thoms. A rare species which has only occurred singly, though from very different types of locality. Golf Course Reservoir (Aug.). Peat pools (May, June, July, Aug.). Thornhill House (July).
- Rhantus suturellus* Harold. A few specimens of this insect were taken in May from the outlet pool of the Golf Course Reservoir. It has not been captured since. Britten records it as a rare species.
- Colymbetes fuscus* Linn. This is a very rare beetle here, and only three have so far been found. Smailes' Pond (Aug.). Thornhill House (May, Sept.).

Dytiscus marginalis Linn. Fairly common in late spring and early summer, but becoming much rarer until August and September. The larval form was plentiful in July and a pupa was dug up in August. In the localities which follow, L. indicates that the larva only was noticed. Smailes' Pond (July—L.). Smailes' Walk (July). Peat pools (May, June, July, Aug.—L., Sept.). Thornhill House (Apl., June, July—L., Aug., Sept.). Parsley Beck (May—L.). Sil Howe Quarry (July—L., Aug.—pupa).

Acilus sulcatus Linn. Very confined in its range and quite rare. Thornhill House has produced, perhaps, the most specimens (Apl., May, June, July, Aug., Sept.). Peat pools (Mar., May, June, July). Randy Mere (July).

Family—GYRINIDÆ

Gyrinus natator Linn. Profuse on stagnant water, but much rarer in the streams. At Thornhill House, hundreds could be seen disporting themselves on the pond surface (Apl., May, June, July, Aug., Sept.). Smailes' Pond (May, Aug., Sept.). Smailes' Walk (July, Aug., Sept.). Golf Course Reservoir, Little Beck village, in a gravel pond (May). Peat pools (Mar., May, June, Aug., Sept.). West Beck (May, Aug.). Beck Hole (June), in a muddy puddle. Randy Mere, Parsley Beck (May, July). Eller Beck (May, June, July). Hawthorn Hill (July). Little Beck stream, Sil Howe Quarry (July, Aug.).

Orectochilus villosus Müll. Not a common water beetle, and only a few were scraped from mossy stones in the Eller Beck during July and August.

Family—HYDROPHILIDÆ

Hydrobius fuscipes Linn. This usually common insect is very rare here, and but few examples have been taken. Ditches (June). Smailes' Walk (June, July, Aug.). Randy Mere (July). Thornhill House (May, Aug.). Parsley Beck (May).

Enochrus melanocephalus Oliv. Very rare. One specimen from the swamp at Randy Mere in July.

Anacæna globulus Payk. A very common insect in all waters with aquatic vegetation of any sort. Smailes' Pond, West Beck (Aug.). Ditches (June, July, Sept.). Smailes' Walk (June, July, Aug., Sept.). Peat pools (Apl., May, June, Aug.). West Beck (Aug.). Randy Mere, small drinking pools, streams on Goathland Moor, Darnholm, Little Beck stream and Hawthorn Hill (July). Thornhill House (May, Aug.). Eller Beck (May, June, July, Aug.). Mill Moor ditch (May, July, Aug.). Parsley Beck (May, July).

Laccobius alutaceus Thoms. Very rare. A few examples from pools. Smailes' Pond, Little Beck village, in the gravel pond (May). Thornhill House (May, Aug.). Darnholm (July).

Limnebius truncatellus Thunb. Widely distributed, particularly in slowly-flowing ditches with plenty of vegetation. Smailes' Pond (May, Aug.). Goathland, in ditches (May, July, Aug., Sept.). Smailes' Walk (June, July, Aug.). Randy Mere, Little Beck stream, drinking pools (July). Thornhill House (Apl., Aug.). Eller Beck (May, July, Aug.). Mill Moor ditch, Little Beck village (May); Darnholm (Aug.).

Megalelephorus aquaticus Linn. Not very common, although fairly well distributed in both running and stagnant water. Ditches and Smailes' Walk (June, July). Goathland (Feb.), in flight. Peat pools and Little Beck village (May). Thornhill House (Apl, May, June, July, Aug.). Drinking pools (July).

- Helophorus æneipennis* Thoms. Abundant and distributed over a wide area. Smailes' Pond (May). Ditches (June, July, Sept.). Smailes' Walk (June, July, Aug.). Goathland (Feb.), in flight and settling in puddles. Peat pools (Apl., May, June, July). Thornhill House (May, June, July, Aug.). Eller Beck (June, July). Mill Moor ditch (May, July, Aug.). Moorland streams, small drinking pools, Darnholm (July, Aug.). Little Beck stream, Hawthorn Hill, Sil Howe Quarry (July).
- H. minutus* Fabr. Not uncommon when it occurred, but restricted in range. Peat pools (Mar.). Thornhill House and Eller Beck (May).
- Atractelophorus brevipalpis* Bedel. Profuse during the summer months in stagnant water, but distinctly rarer in running water. Smailes' Pond, small drinking pools, Little Beck stream, Hawthorn Hill (July). Goathland ditches, Mill Moor ditch (June, July, Aug.). Smailes' Walk (June, July, Aug., Sept.). Peat pools (May, July). West Beck (Aug.). Randy Mere (May). Thornhill House (May, June, July, Aug.). Darnholm (July, Aug.).
- A. arvernicus* Muls. Very rare indeed, and only a few were seen in the Eller Beck in May and June.
- Ochthebius exsculptus* Germ. Very rare. Two specimens have been found, one in the Eller Beck (Aug.) and one in the drinking pool at Darnholm (July). Also recorded from Beck Hole by Britten.
- Hydræna nigrita* Germ. Decidedly rare and apparently confined to a ditch in the immediate neighbourhood. A very few specimens were scraped off vegetation in June.
- Megasternum boletophagum* Marsh. Immature examples of this species occurred during August both at Thornhill House and in the gravel pool at Sil Howe Quarry. There is no doubt that they were swept from submerged vegetation, and the beetle is included in this list in view of the unusual locality.

Family—DRYOPIDÆ

- Helmis maugei* Bedel., v. *ænea* Müll. Very uncommon, and always from the underneath of stones in the stream bed, except for one specimen swept from the pond at Thornhill House (Aug.). Eller Beck (May, June, July, Aug.).
- Lathelmis volckmari* Panz. Very uncommon. From under stones in the Eller Beck (May, June, July, Aug.).
- Limnius tuberculatus* Müll. Taken in similar localities, but much rarer. Eller Beck (June, July, Aug.).
- Dryops ernesti* Des Gozis. One specimen was found under a stone in Goathland in April, and since then two further examples were taken, one from under a stone in the Eller Beck (June) and the other from Little Beck stream (July).

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- (1) This work makes radical alterations in the systematic nomenclature of the British water beetles, and while accepting this change in classification, Beare's list has been adhered to since it is still the latest official British Catalogue.

INDIVIDUALITY IN BIRDS : A STUDY OF ROBINS

GEORGE W. TEMPERLEY

SOME bird observers would have us believe that the habits of birds conform to a very definite pattern ; that under certain stimuli birds will act in certain ways and that given a knowledge of the stimulus we should be able to foretell the responses. There is much evidence to lead one to such a conclusion ; but it is a mistake to conclude that a bird is consequently a mere automaton. A study of the habits of the robins in my garden has convinced me that individual birds have a decided character of their own and have full scope for its display. The following notes will, I hope, prove of interest as showing how such individuality presents itself and may be observed.

My garden is an oblong piece of ground of about three-quarters of an acre in extent, only partially cultivated and surrounded by hedges and fences separating it from similar gardens and open fields. I look upon the garden as a distinct unit. Not so the robins. Hedges and fences do not constitute boundaries for them. The frontiers of their ' territories ' are often invisible to the human eye, extending across a grass plot or a field with no perceptible landmarks, and subject to sudden changes which seem difficult to explain. The result is that at any given time my garden may form a portion of three, four, or even five separate territories, which encroach upon it from outside. In this way I am brought into touch with several different robins, one after another, as I walk round the garden.

The first bird with whom I got on to friendly terms, when I took over the garden, was almost an outsider. I met him quite by accident when I was digging in a remote corner where I had never dug before, for at that time his territory only overlapped the garden by a few feet. He attracted my attention by his fearlessness. He was the first robin I had yet met who would approach an active spade so closely ; and in this, our first interview, he was soon taking worms from my fingers. When visiting Fallodon I had watched the late Viscount Grey feeding his robins from a tin of meal-worms which he held in his hand. He explained to me that the robins associated food with the tin ; that he had begun by putting the tin on the ground until the birds were quite used to it ; then, by putting his hand nearer and nearer to the tin he had accustomed them to his presence, and finally they had come to feed from the tin when it was in the palm of his hand. I determined that my robin should, from the very beginning, associate food with *me*, and in a short time he was taking chewed biscuit from my lips, picking meal-worms off my cap, perching on my

shoulder as I walked about and singing blithely from my finger—treating me, in fact, as though I were merely an animated bird-table. Should a supply of biscuit run out, he would flutter impatiently on my finger and chirp until I opened my mouth widely enough for him to plunge in his head to look round for the last crumbs which he picked from my teeth. During the period of our ‘friendship’ he changed territory more than once. One morning, in walking down to his corner, I was surprised to see him flying up to meet me half way. He had suddenly annexed nearly half the garden and appeared to have no rival. This arrangement enabled me to keep in even closer touch with him. He nested twice in the spring, but never within my garden, and he never encouraged his mate to make friends with me. He always came alone, leaving her in the background of a hedge, though when she was sitting he fed her on the nest with crumbs from my mouth. He would be perched on my finger, feeding unconcernedly on chewed biscuit as if with no thought of anyone but himself; then, suddenly, he would grab two or three larger fragments at once and, instead of swallowing them himself, fly off to his nest, feed his sitting mate and return to his own meal as if nothing had happened.

I had encouraged myself to believe that he associated *me* with his food, but as he got more and more fearless he became equally at home with other members of the household and even with perfect strangers, to whom he would fly when food was offered to him. Owing to this fact he soon became a favourite study for nature photographers, until he developed a disconcerting habit of flying on to the top of the camera at critical moments.

There was never any difficulty in recognising this robin, as his plumage was always of an unusually pale colour, even after a moult. To distinguish him we gave him the name of Robert. One morning Robert was missing. His place had been taken by a bright-coloured aggressive-looking bird whom we dubbed ‘The Usurper.’ He was a complete stranger and at first resented all my approaches. Biscuits had no attraction for him, and I had to go back to meal-worms to quicken his interest. It took weeks to persuade him to take food from my hands, and then he only snatched a morsel and flew off with it. He never remained perched upon me for a moment and never had courage to sing to me as Robert had done. The temperaments of the two birds were as different as could well be. One morning, as I was whistling for the Usurper in a corner of the garden, I saw another robin fly in from a distance and perch on a fence in my neighbour’s ground just two feet from my boundary. It was Robert. He had been ousted by the Usurper, and his new territory was totally outside my

garden. By arrangement with my neighbour I had a fence rail removed, so that I was able to walk through and cross the invisible line which bounded Robert's territory. I could now stand with Robert on one side of me and the Usurper on the other and watch their reactions. They knew their own frontier to a hair's breadth, and I could seldom get either of them to cross it. If I had Robert on my finger and walked with him towards my own garden he would fly off the moment the frontier was reached, even though the Usurper were nowhere in sight. When I was feeding them at the frontier they would perch on a wire which ran at right-angles to the boundary, face one another a few inches apart, throw back their heads, puff out their chests to show their red breasts like danger signals and sing or 'chitter' at one another in a vigorous manner. But these demonstrations seldom lasted long and both birds would simultaneously relax tension and turn to some other occupation quite unconcerned. It seemed an understood thing that this display was merely a formality. The Usurper was nearly always the challenger, and Robert would sometimes avoid the challenge by slipping away. There was never much actual fighting and I did not encourage it. If they did occasionally come to grips the bouts were soon over; Robert showing what, in a human being, would undoubtedly be called an 'inferiority complex' and fluttering away to safety in his own territory. It was evident that Robert had met his match and that he knew it.

The fearlessness of Robert where human beings were concerned had its influence upon the Usurper, who now became much less nervous of remaining perched upon my hand. There was one familiarity that neither of them would allow; they both hated being touched. Robert, when absorbed over his breakfast, might tolerate a gentle stroke on his back, but he would usually sidle away from an approaching finger with evident dislike. No attempt to fondle the Usurper was ever successful.

It was not only interesting to compare the temperaments of the two birds, but to notice how, under different circumstances, their responses to one another varied. I remember one very cold morning that I had Robert clinging to my lips searching for crumbs while the Usurper perched on my upturned collar quite patiently awaiting his turn: for the time all hostilities seemed to have vanished; but that rarely happened.

In another part of the garden a pair of robins began to build on a shelf in an old potting-shed, to which they had access through a broken window at the back. The shelf was very narrow and was separated from the back of the shed by

a chasm nearly two inches wide. Leaf after leaf fell to the ground through this gap, until there was a heap on the floor large enough to compose half a dozen nests. Eventually a few wet leaves stuck on a narrow ledge some inches below the shelf, and on this precarious foundation the chasm was bridged. The bristles of a broom, standing upside-down against the shelf, helped to support the outer rim of the finished nest, which was now partly sheltered by a flowerpot, a coil of rusty wire and an old lamp globe. Here five eggs were laid and the hen began to sit. One morning the nest was found empty. I blamed a rat; for a hole in the floor of the shed showed where a rat might have entered, and the shelf could have been reached with ease by way of sundry empty packing-cases on the floor. I covered up the hole. The expectation was that after such a tragedy a new nest would be built. But no. The hen began to lay again after a few days in the same nest, completed a clutch of four eggs and successfully reared four young. The next year she relined the nest and used it again, but for her second brood deserted it in favour of a small box which I had fastened up on a nearby summerhouse.

I had previously accustomed this hen to eat from my hand, but her mate was a suspicious creature and would creep close to me among the twigs of a beech hedge without plucking up enough courage to hop on to my hand. He was one of the shyest robins that I have yet met. One day, when the hen was sitting on the nest in the shed, some distance away and quite out of sight of me, I made the cock the usual offer of food; but instead of loitering in the hedge as usual, he dashed out as though I had startled him and flew into the potting shed. In a moment out came the hen flying straight to my hand for crumbs while he took her place on the eggs. This happened on several occasions, until the eggs hatched and both parents turned their attention to insect food for the young. Not once did that cock bird come to my hand, although it had the example of its mate's successful temerity. Compare this with the conduct of the Usurper, who grew bolder on seeing the success of his rival Robert.

Alas! the lives of robins are short, and during a spell of wintry weather, first the Usurper and then Robert were reported 'missing' and are now 'presumed dead'; so that my studies have, at least temporarily, come to an end. The individual responses of these robins to similar stimuli differed to such an extent that it became increasingly hard to clear one's mind of the idea that they possessed something akin to 'character.' This makes it difficult to avoid writing of them here without using terms suggestive of their possessing human attributes, though I have tried not to do so.

NOTES ON THE DISTRIBUTION OF WOODLAND FUNGI IN RELATION TO CERTAIN SOIL TYPES

EDNA M. LIND, B.Sc., PH.D.

DURING the autumn months natural history societies frequently organise fungus forays. These usually prove to be enjoyable expeditions in which many fungi are collected, few identified, and fewer still remembered. This autumn a few members of the Sorby Natural History Society decided to attempt to keep notes of the distribution of some of the commoner fungi

SPECIES	GROUND VEGETATION				
	<i>Deschampsia</i>	<i>Deschampsia</i> <i>Pteridium</i>	<i>Holcus</i>	<i>Holcus</i> <i>Pteridium</i>	<i>Pteridium</i>
<i>Amanita mappa</i>	A3		C1		
<i>A. rubescens</i>	C1				
<i>Amanitopsis vaginata</i>	A8, C2				
<i>Lepiota amianthina</i>	A9, D3	B3			
<i>Tricholoma terreum</i>	C4				
<i>Clitocybe vibecina</i>	A3, B8, C6	D4, B10	D1	A3, D2	B16
<i>Collybia maculata</i>	A2, B1				
<i>Laccaria laccata</i>	A1, C2, D2		D1		
<i>Mycena</i> spp.	A6, B6, C6, D8		A1, B1, C1, D6		
<i>Stropharia aeruginosa</i>	B5			A1	
<i>S. semi-globata</i>	A2, B6		B5		B15
<i>Paxillus involutus</i>	B8, C2, D2	B10	D2	D1	
<i>Hygrophorus hypothecus</i>	B6				
<i>Lactarius subdulcis</i>	B3, C1				
<i>L. rufus</i>	B5	B2			B2
<i>L. turpis</i>	B2		B1		
<i>L. quietus</i>	A5, B4, C6, D4		C2		
<i>Russula ochroleuca</i>	B27, C6, D2	B10			
<i>R. emetica</i>	A1, B3, D3		B1, C1	A1	
<i>Boletus chrysenteron</i>	A2, C1		C1		
Total individuals	186	39	24	8	33

Table showing the distribution of woodland fungi in relation to different types of ground vegetation. A—Ecclesall Wood. B—Longshaw (total of 3 visits). C—Limb Brook Wood. D—Black Brook Wood. The figures indicate the number of individuals noticed during a similar length of time in each community.

in relation to the various types of woodland visited. As there were no experts among us we appealed to Dr. Grainger and to Kew for help with identification and the results of our observations form the subject of this note.

Four woods were visited, Longshaw three times, Ecclesall twice, and the others once each. With the exception of Black Brook, which is a semi-natural oakwood, all the woodlands were mixed and largely planted and in each case the ground vegetation was dominated by either *Deschampsia flexuosa* or *Holcus mollis* (with or without *Pteridium*). An approximately equal length of time was spent hunting in each community. While it is recognised that some of the

fungi listed may be mycorrhizal and associated with certain trees, our observations are concerned with their relation to the ground flora. There is little doubt that continued search would reveal individual specimens of most of these commoner agarics in each type of soil, but when the total frequency of the species in all the woodlands is considered it is clear from the table that there is a far greater number associated with *Deschampsia* than with any of the other ground flora types. Some species like *Lepiota amianthina* and *Russula ochroleuca* appear to be confined to this community, the latter usually growing close to pine trees. Others, such as *Paxillus involutus*, and *Lactarius quietus*, while showing a preference for *Deschampsia* are also found in *Holcus* areas. A third group of which *Stropharia semi-globata* and *Clitocybe vibecina* are good examples, is much more tolerant and has representatives in all the types of soil examined. As very few of the *Mycena* species were identified they are grouped together and were found much more plentifully in the *Deschampsia* soils. Altogether, of the total individuals counted on all visits, 77.6 per cent. were found in *Deschampsia* or *Deschampsia-Pteridium* areas, 11 per cent. in *Holcus* or *Holcus-Pteridium* and 11.4 per cent. in *Pteridium* alone.

It is a well recognised fact that our woodland soils can be divided broadly into two types known as 'mor' and 'mull.' Mor is an acid soil with a pH below about 3.8 and a microflora of fungal hyphæ rather than bacteria. Characteristically, in the north of England, it supports a flora dominated by *Deschampsia flexuosa* or *Vaccinium myrtillus*. Mull is a more open soil containing leaf mould and with a large proportion of bacteria. Normally earthworms are present. This may support a varied vegetation, but in our Pennine oakwoods the *Holcus-Scilla-Pteridium* community is the commonest type, and *Holcus* is taken as a good autumnal indicator plant.

Because moulds and other fungal hyphæ are said to predominate in mor, it is not surprising that the *Deschampsia* areas in all the woods (with or without bracken) were the richest in fungi. While this broad generalisation is probably true, very little information is available as to the nature of the microflora of the various soil types. Accurate observations on the distribution of carefully identified species of fungi by members of natural history societies in various parts of the country would be a valuable contribution to our knowledge of woodland soils, if collections were made from definite ground flora communities dominated for example by *Deschampsia*, *Holcus*, *Mercurialis perennis*, etc. It is in the hope that others may be stimulated to carry out observations of this kind that this account of some preliminary work is published.

EFFECTS OF THE SEVERE WEATHER ON BIRD LIFE

RALPH CHISLETT

THE Editor of *British Birds* is collecting information of the effects upon birds of the long frosts and snows of early 1940. It is known that considerable numbers perished in Yorkshire. Mr. Witherby asks for the notes to be sent to him before June 1st, which gives ample time for the comparative numerical status of our resident breeding birds to be noticed. If those Yorkshiremen who are sending notes to Mr. Witherby direct would also send copies to the Y.N.U. Recorders for the Ridings concerned, or to myself, and if others would also send in notes for their districts, it would enable the position as regards Yorkshire alone to be stated in fuller and more interesting detail than is likely to be possible in the pages of *British Birds*.

It is suggested that notes should be in the following form :

1. Details of weather, with dates, including frost, snow-falls, thaws, and ice formation on trees.
2. Effects on bird-life—
 - (a) ascertained deaths ;
 - (b) unusual movements to and from a locality ;
 - (c) comparative diminution in breeding pairs ;
 - (d) comparative diminution in fertility—number of eggs, young, etc.
 - (e) list of species not diminished.

RECORD

PECTEN MAXIMUS AT SCARBOROUGH

DURING January and February, 1940, considerable numbers of the Scallop *Pecten maximus* have been landed by the Scarborough trawlers. On January 29th a full fish box of these molluscs was offered for sale on the fish market. It probably held not less than 50 to 60 specimens. On February 19th there were two heaps each containing as nearly as I could estimate 70 to 80 pectens in each. On February 26th one heaped fish box contained about 90 scallops. A fish box holds approximately 8 stones of fish. *Pecten maximus* has been looked upon as a rather scarce species in the Scarborough area of the North Sea, and has usually been seen only in single specimens. The explanation appears to be that our trawlers are now fishing much closer inshore than before the war, and that the pectens appear to inhabit these waters and are not so numerous further out. The piermen tell me that many others have been landed during recent months, and that they are being got about 8 miles N.E. off Scarborough.—W. J. CLARKE.

1 April 1940

THE RED-FOOTED FALCON IN DERBYSHIRE

R. G. ABERCROMBIE, M.D.

THAT widely-ranging migrant, the Red-footed Falcon (sometimes known as the Red-footed Kestrel or Orange-legged Hobby, *Falco vespertinus* or *Cerchinus vespertina*) is only an occasional visitor to our islands ; its occurrence in Derbyshire is therefore of special interest, for it does not appear to have been previously noticed in that county.

The specimen in question was secured early in May, 1939, amid a tract of moorland of the Peak District. Two birds rose close together from among some rocks ; the first was thought to be a Cuckoo, and the second, the specimen actually secured, was thought to be a Merlin. This resemblance to a Cuckoo and to a Merlin leads to the supposition that the little falcon may be a more frequent visitor to our islands than is usually supposed. The species is a woodland breeder, but the nearest woods were some pine-spinneys about a mile distant. The two birds, however, were not necessarily a pair, for the species is a gregarious one.

The specimen secured was a male, in beautiful plumage. The general dark dove-colour, the bright chestnut feathers of the thighs, the pink feet, legs, cere and circumorbital skin made up an appearance quite unlike that of any British species.

It may be added that steps have been taken to secure from molestation any further similar visitors.

FIELD NOTES

Agriolimax agrestis in February.—During summer I can always rely on finding a good number of *Agriolimax agrestis* under a clump of *Dianthus* in the garden. The morning after the temporary thaw on February 14th, 1940, I was interested to see two starlings work on these plants, foraging so that at times head and neck were out of sight, but every now and again bringing out a slug. The ground was frozen hard, yet some of the slugs were alive, showing that *Agriolimax agrestis* must have great tenacity of life, as during the week previous the thermometer registered six degrees of frost. The slugs had apparently been protected by the mass of plants as snow had covered them to the depth of 1 ft.—J. H. LUMB, Halifax.

Boring at Askham Bryan.—A boring put down for water at West Field Farm, Yorkshire Institute of Agriculture, Askham Bryan, by W. Coulson, Ltd., passed through 40½ ft. of superficial deposits, and proved below these a thickness of 113 ft. of red Bunter Sandstone. The drift consisted of two layers of boulder clay of almost equal thickness, separated by a bed of clean gravel 7½ ft. in thickness.—H. V. DUNNINGTON.

JAMES AND THOMAS BOLTON, OF HALIFAX

W. B. CRUMP, M.A.

It is now some years since the late F. A. Mason reported in *The Naturalist*, July, 1933, the discovery in Switzerland of the original water-colour drawings made by James Bolton for his *History of Fungusses growing about Halifax, 1788-1791*. The six folio volumes contained 244 sheets, arranged in the order in which the species were collected and drawn—one on each sheet, between 1788 and January 1792.

No one was more pleased than I to hear of this discovery, for I had sought for these drawings in all likely places many years earlier. Now I am able to report that another set of drawings came on the market last year. At a sale by Messrs. Sotheby & Co. on May 16th, 1939, 'The property of Captain F. C. F. Parker, Skirwith Abbey, Penrith' included among the quartos:

'LOT 440. BOLTON (JAMES). The Original Drawings for Bolton's *History of Fungi*, 229 Drawings, mostly coloured, numbered, named and indexed, bound in 2 vols., contemporary diced russia. *Circa 1785*.'

The lot was sold to a private buyer, who has refrained from giving me any further particulars of the drawings. But as Bolton described his published work as 'containing 182 copper plates on which are engraved 231 species,' it is reasonably certain that Lot 440 consists of fresh drawings on quarto sheets of the species selected to go on the copper plates. Apparently they have not been re-arranged and brought together as in the published work. That Bolton would do from these drawings as he engraved the copper-plates, quarto size.

My next note relates to the anonymous 'Catalogue of Plants' included in J. Watson's *History of the Parish of Halifax, 1775*. This has been attributed to James Bolton ever since a jejune sketch of his life appeared in *D.N.B.* in 1886. F. Arnold Lees and C. E. Moss fought a lively battle over the 'Catalogue,' or rather the list of flowering plants in it, in *The Naturalist* for 1900 and 1901. Lees there again affirmed his belief that James Bolton was the author, for his friend, W. W. Newbould, had seen the manuscript 'in Bolton's old style hand.' It was all likely enough, and neither Charles Crossland nor I had any other name to bring forward.

So it has rested forty years, and now I have another name to bring forward as the author—Thomas Bolton, the elder brother, who died in 1778. Crossland quoted letters passing between the two in his little biography of James Bolton, and there is evidence that Thomas was a good all-round naturalist. He made considerable collections and both brothers contributed to the Duchess of Portland's museum, in the charge

of Dr. Lightfoot. So much so, that returning from a tour in Scotland in 1774, Thomas Pennant and Lightfoot called on Thomas Bolton and were 'surprized with his vast collection of natural history got together to amuse and improve his mind after the fatigues of business.'

There has recently come into my hands a copy of Watson's *Halifax*, with contemporary annotations in the margin. At the top of p. 729, on which the 'Catalogue of Plants' begins, there is written, 'By the late Thomas Bolton.'

In itself that bears evidence of having been written within a few years of the death of Thomas in 1778. Nor is that all. The fly-leaf at the front bears the inscription :

'This beautiful Copy of Watson's History, in the margins of which are copied the Notes and Corrections of Dr. T. D. Whitaker, the Historian of Whalley, taken from the Doctor's own Copy, was presented to me by Mr. Edward Akroyd, the munificent founder of All Souls' Church, when on a visit to him in January 1862. Jas. Crossley.'

This is James Crossley, the well-known bibliophile of Manchester, who was born in Halifax. His testimony is as good as an affidavit, and such copies of Watson are known to exist. Dr. Whitaker settled at Holme, in Cliviger, just over the border beyond Todmorden, in 1782, and both visited Halifax and had friends there.

The probability is that both brothers had a share in the production of the Catalogue. Thomas, as the elder, was responsible for it, though James, I feel, had a large share in listing the Fungi at all events, as he was drawing them as early as 1761.

I am indebted for the foundation of these notes to Mr. T. W. Hanson, who keeps a watchful eye on London book-sales for anything relating to Halifax.

MEETING OF YORKSHIRE ENTOMOLOGISTS AT QUEEN MARY'S DUB

M. D. BARNES

THE annual Field Meeting of the Entomological Section was held in conjunction with the Union excursion to Queen Mary's Dub on June 17th, 1939. The excursion proved to be a very pleasant one, being blessed with excellent weather. The locality was, however, rather disappointing, the amount of material collected hardly justifying the strenuous collecting carried on by the members present. The most interesting insect taken was the rare and interesting weevil *Anoplus roboris* (Su.), which occurs on alder. This beetle was swept by Mr. Hincks. Most of the other insects taken were of the type one would expect to find in such a locality.

The complete lists of insects taken appear below.

COLEOPTERA (W. D. Hincks)

<i>Helophorus</i> (Sp.).	<i>Grammoptera ruficornis</i> (F.), North
<i>Stenus tarsalis</i> (Lj.).	Stainley.
<i>S. crassus</i> (S.).	<i>Donacia vulgaris</i> (Zs.).
<i>Oxytelus sculpturatus</i> (Gr.).	<i>Crysmela polita</i> (L.).
<i>Anthobium minutum</i> (F.).	<i>Phædon armoraciæ</i> (L.).
<i>Phosphuga atrata</i> (L.), North	<i>Hydrothassa marginella</i> (L.), North
Stainley.	Stainley.
<i>Sciodrepa fumatus</i> (Sp.).	<i>Galerucella grisea</i> (Jn.).
<i>Adalia 10-punctata</i> (L.).	<i>G. tenella</i> (L.).
<i>Coccidula rufa</i> (Hb.).	<i>Longitarsus suturellus</i> (Df.).
<i>Dacne rufifrons</i> (F.).	<i>Phyllotreta undulata</i> (Kt.).
<i>Micropeplus fulvus</i> (Er.).	<i>Aphthona nonstriata</i> (Gz.).
<i>Brachypterus urticae</i> (F.).	<i>Batophila rubi</i> (Pk.).
<i>Epuræa deleta</i> (St.).	<i>Crepidodera transversa</i> (Mm.).
<i>Meligethes atratus</i> (Ol.).	<i>Psylliodes affinis</i> (Pk.).
<i>Diphyllus lunatus</i> (F.).	<i>Sciaphilus asperatus</i> (Bf.).
<i>Telmatophilus caricis</i> (Ol.).	<i>Phyllobius oblongus</i> (L.).
<i>Cryptophagus scanicus</i> (L.).	<i>P. urticae</i> (D.G.).
<i>Litargus connexus</i> (Gf.).	<i>P. viridiæris</i> (Lh.).
<i>Mycetophagus 4-pustulatus</i> (L.).	<i>Sitona lineatus</i> (L.).
<i>Sinodendron cylindricum</i> (L.).	<i>Anoplus roboris</i> (Su.).
<i>Agriotes pallidulus</i> (Il.).	<i>Anthonomus rubi</i> (Hb.).
<i>Dolopius marginatus</i> (L.).	<i>Acalles roboris</i> (Ct.).
<i>Cyphon paykulli</i> (Gu.).	<i>Poophagus sisymbrii</i> (F.).
<i>C. variabilis</i> (Tb.).	<i>Ceuthorhynchus floralis</i> (Pk.).
<i>C. padi</i> (L.).	<i>Ceuthorhynchidius troglodytes</i> (F.).
<i>Cantharis nigricans</i> (Ml.).	<i>Rhinoncus perpendicularis</i> (Rc.).
<i>C. pallida</i> (Gz.).	<i>Limnobaris t-album</i> (L.).
<i>Rhagonycha limbata</i> (Th.).	<i>Hylesinus fraxini</i> (Pz.).
<i>Cis boleti</i> (Sp.).	

The following list of beetles taken by the writer are in addition to those given by Mr. Hincks:

<i>Elaphrus cupreus</i> (Df.).	<i>Phædon cochleariæ</i> (F.).
<i>Melanotus rufipes</i> (Hb.).	<i>Prasocuris junci</i> (Bm.).
<i>Corymbites tessellatus</i> (F.).	<i>Gonodera luperus</i> (Hb.).
<i>Agriotes obscurus</i> (L.).	<i>Apion ervi</i> (K.).
<i>Dascillus cervinus</i> (L.).	<i>Cionus scrophulariæ</i> (L.).
<i>Helodes marginata</i> (F.).	<i>C. alauda</i> (Hb.).
<i>Cantharis pellucida</i> (F.).	<i>Barypithes araneiformis</i> (Sk.).
<i>Malachius bipustulatus</i> (L.).	
DIPTERA (W. D. Hincks).	
<i>Pentaneura monilis</i> (L.).	<i>Leptis tringaria</i> (L.).
<i>Chironomus tentans</i> (F.).	<i>Symphoromyia crassicornis</i> (Pz.).
<i>C. supplicans</i> (Mg.) [<i>chlorolobus</i>	<i>Dioctria rufipes</i> (D.G.).
(Kf.)]	<i>Acrocera globulus</i> (Pz.).
<i>Polypedilum nubeculosum</i> (Mg.).	<i>Dolichopus plumipes</i> (Scop.).
<i>Chaoborus crystallinus</i> (Dg.).	<i>D. popularis</i> (Wd.).
<i>Liriope</i> (Ptychoptera) <i>contaminata</i>	<i>Liogaster metallina</i> (F.).
(L.).	<i>Leucozona lucorum</i> (L.), North
<i>L. (Ptychoptera) minuta</i> (Tonn.).	Stainley.
<i>Microchrysa flavicornis</i> (Mg.).	<i>Syrphus vitripennis</i> (Mg.).
<i>Beris clavipes</i> (L.).	<i>Sphaerophoria menthastri</i> v. <i>picta</i>
<i>B. chalybeata</i> (Forst.), North	(Mg.).
Stainley.	<i>Neoscasia podagrica</i> (F.), North
<i>Chloromyia formosa</i> (Scop.), North	Stainley.
Stainley.	<i>N. floralis</i> (Mg.).
<i>Chrysops cæcutiens</i> (L.), North	<i>Xytota segnis</i> (L.), North Stainley.
Stainley.	<i>Syrirta pipiens</i> (L.).

HYMENOPTERA (W. D. Hincks)

Tenthredella mesomela (L.). *Allantus arcuatus* (Fst.).
Tenthredopsis nassata (L.). *Rhogaster viridis* (L.).

ODONATA

Ischnura elegans (V. D. L.), W. D. *Enallagma cyathigerum* (Ch.), E.
 Hincks. Dearing and W. D. Hincks.
Coenagrion puella, E. Dearing.

EPHEMEROPTERA (W. D. Hincks)

Baetis rhodani (Pt.). *Baetis* sp., a single female in poor
 condition.

LEPIDOPTERA (E. Dearing)

BUTTERFLIES—Imagines

Pieris brassicae. *Lycæna icarus*.
P. napi. *Cænonympha pamphilus*, common.
Epinephele ianira.

MOTHS—Imagines

Camptogramma bilineata. *Nymphula stagnata*.
Melanippe montanata. *Hydrocampa nymphaea*.
Lomaspilus marginata.

MOTHS—Larvæ

Porthesia similis. *Diloba cæruleocephala*.

In Memoriam

DR. J. L. KIRK. 1869—1940

JOHN LAMPLUGH KIRK was born at Hull in 1869, and died at Leeds on February 26th. He was educated at Cambridge and London. He took his degrees of M.B. and B.C. in 1896, and was M.R.C.S. and L.R.C.P. a year later. He was for some years employed in London hospitals, and was later medical officer for the Pickering Urban Council.

He was a particularly keen collector of 'bygoness,' which filled every available space in his home and garden at Pickering. He was also a capable excavator, and did much work in association with Mr. Philip Corder, M.A., F.S.A., on Roman sites. Eventually he had a desire to place his collections in some Yorkshire museum, and Doncaster, Wakefield, Middlesbrough and Scarborough, in turn, announced in the press that the Kirk Collection was to go there. He eventually arranged for the specimens to be housed in the Old Street being prepared at Hull, and indeed, many of his specimens were sent to Hull, and were on exhibition there for some years. Difficulties, however, arose over certain details, but these were apparently overcome by the people at York, where the former female prison at the York Castle became available and the York Corporation went to considerable expense in suitably housing the collection. Dr. Kirk made provision for the future maintenance of the collection, by appointing Mr. H. G. Thornley and the late Dr. T. W. Woodhead as Trustees.

Dr. Kirk was F.S.A., and received the Honorary Degree of Doctor of Philosophy from the Leeds University last year.

T. S.

YORKSHIRE NATURALISTS' UNION : VERTEBRATE ZOOLOGY SECTION

REX PROCTER

A MEETING of the Vertebrate Section of the Yorkshire Naturalists' Union was held in the Library of the Church Institute, Leeds, on Saturday, February 10th. The Sectional Meeting was preceded by a Meeting of the Yorkshire Wild Birds and Eggs Protection Acts Committee. At the Sectional Meeting the chair was taken by Mr. E. Wilfred Taylor, and the Minutes of the previous Meeting were read and confirmed.

A general discussion was held on the present position of the Committees within the Section, and certain proposals were made. After discussion, certain resolutions as under were adopted by the Section, and it was unanimously decided to submit these to the General Committee of the Union at the next General Committee Meeting, with the Sectional recommendation that these resolutions should be adopted for the general good of the Vertebrate Section.

RESOLUTIONS TO BE RECOMMENDED TO THE GENERAL COMMITTEE

1. It is resolved by this Section that an additional officer shall be appointed to the Mammals, Reptiles, Amphibians and Fishes Committee, and that this officer shall be known as the Editor of Records, and that the duties of this officer shall consist of the collection and presentation of records submitted at this Committee, and that the title of Convenor to this Committee shall now be altered to 'Secretary.'
2. That a Committee for Ornithology shall be formed by the members of this Section, to consist of a Chairman, Secretary, Editor of Records, Representative on the Executive, and such members of the Section as are interested in the study of Ornithology, and that the duties of these officers shall be those duties normally performed by such officers.
3. That a Wild Birds and Eggs Protection Acts Sub-Committee shall be elected by the Ornithological Committee to take the place of the present Wild Birds and Eggs Protection Acts Committee, and that this Sub-Committee shall consist of a Chairman, Secretary, Treasurer, and additional members, that election to this Sub-Committee shall be made by members of the Ornithological Committee, that this Sub-Committee shall elect its own officers to fill the foregoing three posts, and that thereafter this Sub-Committee shall have the power to co-opt to itself such additional members as it may desire to co-opt, to assist it in the performance of its duties, and that the duties of this Sub-Committee shall be those duties at present performed by the Wild Birds and Eggs Protection Acts Committee.
4. That in the opinion of this Meeting, the interests of the Union, the Section, and of Yorkshire Ornithology will be more fully served if the Systematic Ornithological Reports be made to cover the calendar year, to be read at the February Meeting of the Section in future, and to be subsequently co-ordinated and published in the April issue of *The Naturalist*.

It is considered desirable by the Section that the Editor of Records should prepare a report on Ornithology in general terms to be included in the Annual Report of the Union, presented to the General Meeting, and published in January.

Following the business part of the meeting, Mr. A. Hazelwood exhibited a series of skins including the Robin, Redwing and Thrush. These were birds which had died during the recent hard weather, and included examples of both the native bird and the Continental race, the differences being explained by Mr. Hazelwood.

Mr. W. W. Nicholas then read and illustrated a paper on 'Bird Watching with Still and Cine Camera.' The Lecturer dealt first with the Cornish Chough. He described this as one of our rarest breeding

birds. It is a member of the Corvidæ. The Lecturer stated that he had never observed more than eight of these birds at one time, and that they were always in pairs and never in flocks. He had observed that the usual number of young in the nest was two. The young are fed on regurgitated food, but this food is regurgitated in a manner which in the Lecturer's experience is peculiar to these birds. The behaviour of the Chough is similar to that of the Jackdaw, and the call is similar but shorter and more closely chopped off. The plumage in the young is much duller than that of the adult bird. The legs and feet are red, as in the adult, but the beak is proportionately much shorter and of a yellowish blue colour.

The next bird dealt with by the Lecturer was the Little Grebe. The nest is composed of pond plant debris and is a floating nest. The birds always approach the nest under water and bob up to the side of the floating nest. When the bird leaves the nest, the eggs are covered by debris from the side of the nest. It has been suggested that this covering assists incubation, but the Lecturer considered that this covering is purely protective, as the eggs are always covered when the bird is alarmed, even when the alarm is not such as to make the bird leave the nest entirely, and Grebes are in the Lecturer's experience very close sitters, providing no need for artificial incubation. It had been further noted that when the bird was sitting it covered itself with weed over the back, which is a confirmation of the protective theory. Most journeys to and from the nest and across open spaces were made under water. After the young were hatched they were carried on the backs of the parents for their first journeys, and were held in position by the crossed wings of the parent bird. When first hatched the young do not walk but hop like a frog.

The Red Throated Diver was next described by the Lecturer. The nest is usually found in heather or on the sandy beaches of lochs, and is of a very primitive form consisting of little more than a hollow. The usual number of eggs in the clutch is two. Both sexes incubate the eggs, but the male is much more casual in its duties than the female. The Lecturer stated that on one occasion he had observed the female brood for seven hours without apparent movement. The male bird, on the other hand, was restless, and consequently changed position. It also appeared to be sleepy and often fell asleep on the nest while brooding. The general routine was that the female brooded in the mornings and the male in the afternoons. While one bird was brooding the other remained generally within about 100 yards of the nest. The birds were unable to walk properly on land, progress being usually made by sliding forward upon the breast, using the legs as levers. Mr. Nicholas stated that in his experience Red Throated Divers are much more numerous than the Black Throated Divers.

A series of notes on the Coot were next read. The plumage was described as greyish black with the head a black velvety shade, the beak white, and a distinguishing bald patch on the head above the beak. The Coot is a truculent bird and will not permit Grebes or Water Hens to nest undisturbedly upon the same pond. Deep water is generally preferred for nesting, and a common nesting site is an outstretched branch of a tree projecting over deep water. The nest is composed of vegetable debris and the number of eggs in the particular nest observed by the Lecturer for these notes was eight. While incubating the bird has a typical brooding note similar to a 'Chock' caused by the snapping of the beak. Mr. Nicholas stated that the text-books usually describe this note as being caused by the meeting of the mandibles, but after careful observation he is of the opinion that this statement is erroneous, and that the note is a true vocal note. The young when first hatched have a sooty black body with a scarlet head, dark pink at the top with frills of a rich ginger colour. The adult plumage is assumed in about a fortnight.

In the nest observed by the Lecturer one of the young died and was eaten by the others.

Illustrations were also given on the Kestrel, Peregrin and Ringed Plover.

The lecture was very well illustrated by slides and films, and it was obvious that many difficulties had been overcome by Mr. Nicholas in the preparation of suitable hides from which to photograph the birds.

Mr. A. Gilpin then read a paper on "Some Breeding Birds." The birds were dealt with according to the type of country in which the nest was usually found, and a series of coloured slides was shown giving details of the birds and their nests. Among the birds illustrated were the Thrush, Blackbird, Robin, White Throat, Black Cap, Willow Warbler, Sedge Warbler, Hedge Sparrow, Dipper, Long-Tailed Tit, Great Tit, Marsh Tit, Blue Tit, Tree Creeper, Meadow Pipit, Tree Pipit, Spotted Flycatcher, House Martin, Sand Martin, Greenfinch, Bullfinch, House Sparrow, Linnet, Lesser Redpoll, Reed Bunting, Starling, Great Spotted Woodpecker, Jackdaw, Cormorant, Shag, Gannet, Heron, Woodcock, Curlew, Redshank, Ringed Plover, Green Plover, Oyster Catcher, Herring Gull, Kittiwake, Guillemot, Black Guillemot, Fulmar, Red Throated Diver, Little Grebe, Moorhen, Stock Dove, Turtle Dove, Pheasant, Partridge.

The slides gave many naturalistic impressions of the birds photographed and provided an interesting collection.

Finally, a vote of thanks to the Lecturers and Lanternists was carried unanimously.

Text-book of Biology, by **E. R. Spratt** and **A. V. Spratt**, Second Edition, revised and enlarged, pp. viii+692, with 537 figures. University Tutorial Press, 11/6. In the note to this second edition the authors state that the text and figures have been thoroughly revised. Two new chapters dealing with Pine and Flowering plants have been added to meet the requirements of the Pharmaceutical Society's examinations, and in the Appendix some further hints are given with regard to the preparation of microscope slides. The volume is an excellent manual for students preparing for the biology papers in London Inter. B.Sc., Higher School, Prelim. Medical, and similar examinations. The material prescribed for such examinations is dealt with very fully and in a manner particularly helpful to the private student. The illustrations are well chosen and very clear, and for its size and actual content is one of the cheapest biology text-books now available.

Wild Life of the Seashore, pp. 204, with 98 illustrations and 5 pages of picture tables. **Unwritten History and How to Read It**, pp. 205 with 92 illustrations and 7 pages of picture tables. These two volumes are by **W. Percival Westell** and **Kate Harvey** and are Books VII and VIII in the authors' 'Look and Find Out' Series published by Messrs. MacMillan at 3/- per volume. These are two books in an attractive series written specially for the young beginner. In the volume on the seashore a surprising number of creatures and plants are dealt with and the matter is presented very attractively. Detailed descriptions would obviously be out of place, but with the help of the fine illustrations, the youngsters will certainly know what to look for in their seaside rambles. The second volume is perhaps the better of the two. Here the authors have tackled the difficult task of making archæology and pre-history attractive to the child of school age, and we think they have succeeded. Boys and girls will take naturally to the practical side of this subject, if rightly directed, and this book should be a most useful ally of the enthusiastic teacher. The subject is developed chronologically and the illustrations fit in exceedingly well. Both of the above volumes have appendixes giving picture tables and diagrams. These are clearly and simply drawn and should stimulate the pupils to produce similar sketches to illustrate the notes of their direct observations.

CORRESPONDENCE

WOOD PIGEONS

To the Editor of *The Naturalist*.

Mr. T. Hyde-Parker in his notes on the Wood Pigeon, *The Naturalist*, February, 1940, No. 997, p. 50, states in regard to the shooting of these birds: ' . . . it is useful to have a dog to retrieve, though, by the way, some dogs do not care to carry this form of game—will not in fact pick them up—possibly owing to the quantity of easily detached and particularly fluffy feathers.' I have not much experience in shooting Wood Pigeons, but I do not think it wise to take a dog on such occasions. Everyone will agree that the feathers of Wood Pigeons are very loosely attached to the skin, but whether Mr. Parker be right in attributing to this cause the fact of some dogs refusing to retrieve them is another matter, but he may be. Or it may be this reasoning is possibly fallacious. The *post hoc ergo propter hoc* method of reasoning is very often unreliable. The feathers of these birds are covered with a greyish-blue powder which is readily removed from them. I do not know the nature of this powder, but it may be offensive to dogs. Still I think there is another reason why dogs do not care to carry these birds. I consulted my friend, Mr. J. T. Green, of Thornton-le-Dale, on this subject, and in a letter to me he writes: ' Do not take a dog when going after Wood Pigeons. Good retrievers will retrieve anything, despite the fact that some of them do not like Wood Pigeons. Really, I do not think dogs like Wood Pigeons, but I would not say on account of the fluffy feathers, simply because the feathers are loose and the dog is left with a mouthful which he seems to have difficulty in removing. Again your suggestion that the powder may have something to do with it may be true. Yes, I have noticed the powder. We call it 'bloom,' and in the spring especially it rubs off very easily. But I should like to point out that some dogs do not like retrieving Woodcock, and they have neither loose feathers nor bloom. I have seen an old curly-coated retriever fetch Hawks, Rooks, and a Fox, and even live Hawks when their claws have been firmly fixed in the dog's face. It must be remembered a gamekeeper's dog and shall I say a gentleman's dog are two very different types. There can be no doubt dogs do not like Wood Pigeons—the cause may be loose feathers, or it may be the bloom, or perhaps both. Most dogs retrieve them, even against their inclination, still you get the odd one that will not touch them.'

Now I will make a suggestion. It is that dogs do not like to carry Wood Pigeons and Woodcock because the smell of these birds is very objectionable to the dog. I have seen, and doubtless many more people have also, dogs approach food offered to them, sniff it and walk away. The sense of smell of a dog is a sure guide to its likes and dislikes, and an object giving off an objectionable smell to a human being is often, agreeable to a dog. Mr. Parker's statement that ' some dogs will not in fact, pick them (Wood Pigeons) up ' seems to confirm my contention, which also holds good in regard to the Woodcock. I could give instances of a dog's behaviour resulting most certainly from its sense of smell, but the matter is too well known to merit any further demonstration. My suggestion is, I think, most probable, although it is always difficult for a human being to understand in such cases the mentality of an animal in the sub-human creation. Usually a man puts his own mental quality into the other animal's head and evolves an anthropological conclusion of a biological phenomenon of which he can really have no conception.

Incidentally, I may mention that these wretched Wood Pigeons have frequented my garden and wasted the brussels sprouts.

ROBERT J. FLINTOFF.

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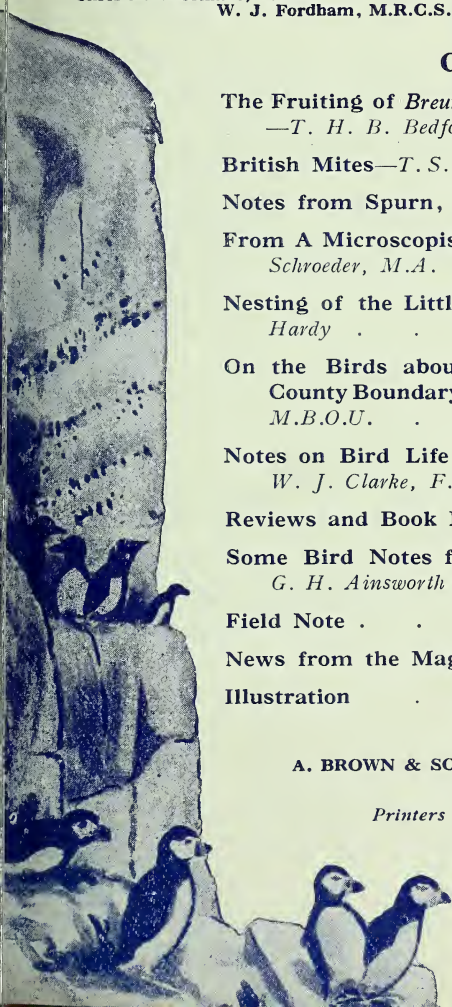
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THE FRUITING OF *BREUTELIA ARCUATA* SCHP.

T. H. B. BEDFORD

A REVIEW of the available literature leaves one with the impression that *Breutelia* has very rarely been found with fruit in Yorkshire. So far as the writer is aware, it has not been seen by any living bryologist. Good fortune has,



Fig. 1

A single stem of *Breutelia* with fruit, from Uldale. In the natural state the seta is much more arcuate than indicated in the photograph. This specimen was collected in August, 1939. The capsule was mature but still possessed its lid which was lost during drying. Spores from capsules in this colony were shown by culture to be fertile. (The scale represents one inch.)

however, favoured the writer, who is able to report it with fruit in two stations.

- (1) Nor Gill, Hebblethwaite Hall Gill. Here the moss is fruiting on left bank of the stream in a colony about 2×3 ft. in extent. The colony is situated approximately where the 850 ft. contour is indicated crossing the stream on the six-inches-to-the-mile ordnance survey map (Sheet XLIX S.W. (Yorkshire) Ed. 1910). This colony has now been under observation for three seasons, including the last (1939), and it has always fruited freely. Repeated examinations have failed to discover other fruiting colonies in the gill although the moss is abundant.

- (2) Uldale (Rawthey). In this region the moss has been found with fruit in three localities. One colony is at the foot of the steep rocks on the left bank of the Rawthey, about half a mile above Uldale House. This station has an altitude of approximately 1,000 ft. O.D. The colony is relatively small although well grown. A photograph of a specimen from this colony is reproduced in Fig. 1. A second colony is on the left bank of the Rawthey, about half a mile higher up the stream. It is close to the water and covers an area of approximately 4×2 ft. It is fruiting freely. The third colony was discovered on October 20th, 1939, shortly before the completion of this article. It is growing near the left bank of the Rawthey in the small limestone gorge directly above the main waterfall. The colony covers an area of approximately 4×2 ft. It was found to possess an abundance of fruit in all stages of development from the young sporophyte showing no differentiation of capsule to the mature state. In some instances the ripe capsule had already discharged its contents and in others the empty capsule had fallen and the seta alone remained. Male and female plants were intermingled throughout the colony and careful measurement showed each fruit bearing female to be accompanied within a distance of an inch by one or more males; frequently the sexes were juxtaposed. The Rawthey colonies were discovered in 1939 and they have therefore been under observation for one season only.

It is proposed to consider briefly some of the factors which may be responsible for the rarity of fruit-bearing by *Breutelia*.

Breutelia is a dioicous moss; the male and the female flowers are born on separate plants. At one time it was the intention of the writer to make a numerical survey of the sex distribution in colonies of this moss with a view to determining its relation to fruit bearing; an investigation on these lines of the phenomenon of fruiting in *Climacium dendroides* W. and M. has already been described (Bedford, T. H. B., *North Western Naturalist*, 1938, 13, 213). The attempt was, however, abandoned when other species of moss were encountered which lent themselves more readily to an investigation of this type. It is important, therefore, to realise that the following conclusions are based mainly on observations of a general character. For the purposes of this article the term 'colony' has been applied to any single collection of stems. The stems probably belong in most instances to one individual. All the colonies in one particular area were usually of the same sex and female colonies greatly outnumbered the male colonies.

Plants of both sexes were discovered only in the fruiting colonies where they were intermingled. With these exceptions, colonies were invariably unisexual. Evidence has been provided by the writer that the fertilisation range of male *Climacium* is normally not greater than three inches. All available evidence would seem to indicate that the fertilisation range of *Breutelia* is also restricted.

It is suggested that *Breutelia* is rarely found with fruit for the following reasons : (1) the remarkable segregation of the sexes ; (2) the rarity of male colonies ; (3) the restricted fertilisation range of the male plants. It is, of course, impossible to deny that other factors may be present ; the moss may have lost the power of effecting fertilisation or of developing sporophytes in some localities. These possibilities cannot be entirely excluded in the absence of transplantatibn experiments, although they are rendered improbable by the finding of antheridia and archegonia which seem on microscopical examination to be normally developed and healthy.

The writer is convinced that fruit occurs far more frequently than is generally supposed. Although the fruit remains attached to the plant for a considerable period after the discharge of the spores, it is evident, however, from Fig. 1, which represents a single isolated fruiting stem that it will usually be hidden from view by the presence of innovations. It is, in fact, generally necessary to separate the plants in order to see the fruit. The presence of male flowers, although no certain guide, does at all events suggest the possibility of fruit ; these large terminal discoid flowers are easily recognised from above and any colony presenting male flowers is worth searching. It was the presence of male flowers that led to the discovery of fruit in the second colony in Uldale.

The writer would be grateful if bryologists would refrain from collecting material from the above fruiting colonies, as they are being used for experimental purposes.

Note.—Since the completion of this article, the moss has been found fruiting abundantly in Near Gill Laid. This Gill is in the same region as Nor Gill.

BRITISH MITES

AMONG many interesting species of Mites figured and described in *The Naturalist* by the late Dr. George, of Kirton Lindsey, some years ago, were a number of species new to science. Dr. George gave his collection to the Hull Museum, but it seems desirable that the type specimens should be available in the national collections at South Kensington, and students interested in these may care to know that this has been arranged.—T. S.

NEWS FROM THE MAGAZINES

The Journal of the Commons, *Open Spaces and Footpaths Preservation Society* for January, is a special 'Access to Mountains' Number, and includes a paper on 'The History and Significance of the Act' by Sir Lawrence Chubb, and 'The Act Analysed' by Humphrey Baker.

The Entomologist for February contains 'The Occurrence in Britain of *Euprepia cribraria* L. v. *arenaria* Lempke (Lep. Arctiinæ), by A. J. L. Bowes (with figures); 'A New British Variety of *Lycia hirtaria* Clerck (Lepidoptera, Geometridæ), by C. N. Hawkins; 'Migration Records, 1939,' by T. Dannreuther (*Vanessa cardui*, quite numerous at Bradford in September; *Colias croceus*, a female in the Isle of Man; *Acherontia atropos*, Shipley, Yorkshire, picked up dead, July 18th (W. Webster); larvæ in Cheshire and Lincolnshire; *Herse convolvuli*, Isle of Man); 'A Collecting Trip to Scotland (August 1939), by C. G. M. de Worms; 'Revisional Notes on Malayan Rhopalocera,' by A. S. Corbet; '*Zeuxidia doubledaii* Westwood,' by C. J. Brooks; and several shorter notes and observations.

The Entomologist's Monthly Magazine for February contains 'A Report on a Collection of Ceratopogonidæ (Diptera) from British Guiana,' by J. W. S. Macfie; 'A Further Contribution to our Knowledge of the Gall-making Hymenoptera of the Western Isles of Scotland,' by J. W. H. Harrison; 'On the Biology of the Sawfly *Xyela julii* Brebisson (Hym. Symphyta), by R. B. Benson; 'Sawflies (Hym. Symphyta) in Teesdale, June 1939,' by R. B. Benson; '*Bledius spectabilis* Kraatz and *B. limicola* n.sp. (Col. Staphylinidæ), by C. E. Tottenham (*B. limicola* Deal, Waking and Highcliffe); 'A Note on *Xyleborus sampsoni* Donisth. (Col. Scolytidæ), by K. G. Blair; '*Hydroporus cantabricus* Sharp (Col. Dytiscidæ), an addition to the British list,' by F. Balfour-Browne (Southaven Peninsula, Dorset); '*Lordomyrma infundibuli* (Hym. Formicidæ), a new species of Ant from Dutch New Guinea,' by H. Donisthorpe; and several shorter notes.

Mr. Albert Wade has published a list of Salmon and Sea-Trout Synonyms in *The Fishing Gazette*. This list is remarkable as it contains no fewer than 149 different names. They have been arranged alphabetically for convenience of reference. Some of the names are obsolete, but the majority are still in use. Both species in so many stages of their career are called by the same or different names in varying localities that it is sometimes difficult to make definitions. Unfortunately, the terms are used somewhat loosely, for, as a Swedish proverb says, 'A dear child has many names.' It is an attempt to form a basis for a record of local nomenclature, and, in the first place to clear up some of the superfluities of popular names and local idiosyncrasy and, secondly, to collate and preserve them in the interests of philology.

The Entomologist's Monthly Magazine for March contains 'The effect of ants on the acidity of soils,' by W. Pickles (observations at Thornhill, Yorks.); '*Scaptia testacea* nom. nov. and *S. fuscata* Müll. (Col. Scaptiidæ), by A. A. Allen; 'On the habits of *Scaptia* (Col.), by H. Donisthorpe; 'A synopsis of the Brazilian species of *Microcylloepus* (Coleoptera Elmidae), by H. E. Hinton; 'A new species of *Gabrieus* Stephens (Col. Staphylinidæ) from Japan,' by C. E. Tottenham; and several shorter notes.

The Entomologist's Record for March contains 'A New Irish Plume Moth (Lep. *Alucil.*), by T. B. Fletcher, with 'A Note on its Genitalia,' by F. N. Pierce; 'Le mont dore and montagne de Lure,' by H. G. Harris; 'The Reputed Apterousness of *Biorrhiza pallida* Oliv. (Cynipidæ), by H. J. Burkill; '*Aporophyla australis* F. ingenua Freyer at Sandwich, Kent,' by A. J. L. Bowes; 'A New Subspecies of *Nyssia zonaria* Schiff. and A New Aberration of *Poecilopsis lapponaria*, by J. W. H. Harrison; Collecting Notes and Supplements 'Records and Full Descriptions of Varieties and Aberrations,' and 'The British Noctuae and Their Varieties,' by H. J. Turner.

NOTES FROM SPURN, 1939

RALPH CHISLETT

INSTEAD of having data available for consideration covering most of the whole period of the autumn migration, from July to December, as had been hoped, and largely arranged for by reservations of holidays and time available until September and October, our observations at Spurn perforce ceased at the end of August. The order followed in this report is chronological rather than generic in view of the incompleteness of the period covered.

The following have contributed records to the Spurn Note Book in 1939: Messrs. G. H. Ainsworth, W. S. Bullough, R. Chislett, V. S. Crapnell, G. R. Edwards, C. G. des Forges, H. Foster, R. M. Garnett, J. Lord, C. A. Norris, C. W. G. Paulson, E. Watson.

During the early part of the year the most interesting species reported were: on February 15th three Short-eared Owls and thirty Wigeons (J.L. and G.H.A.). On February 26th only five Wigeon were visible, but there were four Common Scoters, twenty-five Brent Geese, one Pinkfoot, twenty Grey Plover, some fifty Sanderling, and thirty-eight Bar-tailed Godwits (V.S.C., G.R.E., H.F., and E.W.). On both these dates in February Hooded Crows, Skylarks, Oystercatchers, Ringed Plovers, Turnstones, Knots, Dunlins, Common Redshanks, and the usual species of Gull were noted.

THE SPRING MIGRATION MOVEMENT.—No attempt was made to watch this thoroughly, as it had been hoped to do with the autumnal movement. A female Siskin was recorded for April 18th, together with three Wheatears, a Short-eared Owl, and a Green Sandpiper. Linnets were arriving. Four Reed Buntings were all cocks (G.H.A. and R.C.).

The last Hooded Crow was seen on May 18th, on which date also two Ring-Ousels were seen, and a male Red-backed Shrike which was still about the bushes on May 21st. The May 18th observer (R.M.G.) also recorded a flock of thirty Chaffinches, one Pied Flycatcher, many Common Redstarts nearly all cocks, and some Warblers (Willow, Sedge, Common and Lesser White-throats).

UNUSUAL SOUTHWARD MOVEMENT OF SWALLOWS.—On May 19th, before 9-30 a.m., a few birds passed northwards, but birds passing after this time were all going south in small parties at intervals of 10-15 minutes. From the extreme point they passed out towards the Lincolnshire coast. On the 20th Mr. Garnett continues, 'Swallows in large numbers, a few House Martins, and still fewer Sand Martins passed, all going south. I counted up to one hundred birds, and the percentage showed Swallow 77, Martin 19, Sand Martin 4.

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The change of direction in the wind seemed to have had no effect on their movement.' On the 19th wind was north-east, but had changed on the 20th to south-west, which may have been a local change since the north-east wind, with sunny days and cold nights, continued for some time after these dates farther north in Yorkshire.

On May 19th a flock of Common Gulls (60-80 birds) flew steadily and fast along the inner side of the estuary, then crossed the neck and flew out to sea in a north-easterly direction. On the same day a group of Wheatears, eight of them males, were thought by R.M.G. to be Greenlanders. On the 20th three Lesser Redpoles were present.

Three Turtle Doves came off the sea on May 29th and made across the Humber towards Lincolnshire (W.S.B.), and nine were in the buckthorn on June 11th (J.L. and G.H.A.). On June 21st the last small party of Common Scoters was reported. The twenty-four Oystercatchers seen in flock on June 25th is not a very common sight on this coast.

BIRDS NESTING ALONG THE SPURN PENINSULA.—An attempt to compass the birds breeding in the warren and along the point was made on different dates by R.M.G., W.S.B., G.H.A., and R.C., partly to minimise confusion between local breeders and their families and the autumn passage migrants later.

Passerine species known to breed were as follows :

Carrion Crow.—One pair.

Magpie.—The local pair this year nested in a hedge outside the warren.

Starling.—Several pairs in the buildings at the Point.

Greenfinch.—At least one pair in the bushes at the Point (W.S.B.).

Linnet.—Several pairs ; nests were seen in the bushes and in the tall marram grass.

House Sparrows nested in the houses at the Point.

Reed Bunting.—Four to six pairs bred.

Corn Bunting.—A pair in the field next to the warren.

Skylark and Meadow Pipit.—A number of pairs of each.

Common Whitethroat.—Several pairs.

Wheatear.—A juvenile seen on June 25th was solitary but may have been bred in the warren.

Swallow and House Martin.—Nested in the empty gun emplacements at the Point (W.S.B.).

The status of the Oystercatchers, Ringed Plovers, Little Terns, and of the Arctic Tern, proved breeding here for the first time, have been referred to in the Annual Report of the Union.

A Shelduck nested at the Kilnsea end of the warren.

The Redshank nested near Kilnsea, but not in the warren. Whether either of the species of Partridge, of which covies were seen, had actually bred in the warren is uncertain.

THE AUTUMNAL MIGRATION season that ends on August 27th is indeed short and incomplete. Movements in August were fairly normal with the following as the more interesting of the records.

Yellow Wagtails were rather more noticeable than in August of the previous year, parties of fifteen and of six birds being seen on August 22nd (C.G.des F. and C.W.G.P.).

Pied Flycatchers were noted daily from August 21st, the most being four on the 27th, by which date only one Redstart had been reported.

Regarding Warblers, it is interesting to find that Mr. C. A. Norris, who watched during the week-end August 5th to 8th, reports the Common Whitethroat as absent, although several pairs were nesting in May and June. Odd Warblers occurred spasmodically during the month. On August 23rd there were twenty-five Willow Warblers present (C.G.des F. and C.W.G.P.).

The odd single Wheatears seen on the earlier days of the month increased until on the 27th ten were counted. Passing Swallows were scarce until August 21st, after which they continued to pass daily in parties, with occasionally a few Sand Martins. Juvenile Cuckoos were reported throughout August, sometimes several being seen in a day.

The unusual sight of an Osprey on August 7th reported by C.A.N. was referred to in the Annual Report. The usual numbers of Kestrels, and occasional Merlins, were reported.

Common Scoters had reappeared on August 15th, when a party of twenty was seen (G.R.E.). Waders were in normal numbers. Migrating Oystercatchers seemed to be more in evidence than usual, large parties being seen August 21st-24th (C.G.des F. and C.W.G.P.). On August 15th Knots were passing down the coast in long strings of a few hundred each for an hour and probably totalled 2,000 birds; Grey Plovers numbered up to 200, and Redshanks were in similar numbers (G.R.E. and E.W.). Two Spotted Redshanks were seen on August 5th (C.A.N.). Green Sandpiper were unusually noticeable on August 21st when six were flushed from dykes near to the warren; and three Greenshanks were noted on the same day (C.G.des F. and C.W.G.P.). The same observers saw thirteen Common Sandpipers on August 24th, and on the same date, on the coast a little north of Easington, they saw two immature Black Terns, one of them standing on floating timber, and six Arctic Skuas, no doubt attracted by the large number of feeding Terns of several species.

THIRTY YEARS AGO

The generous loan by Mr. H. F. Witherby of his notebook containing records made at Spurn more than thirty years ago enables the following comparisons to be made with our recent records. Mr. Witherby's notes cover the periods between September 10th and October 8th of 1908, and between September 9th and October 27th of 1909. There are also notes made in January, 1910, and April, 1911. Dr. C. B. Ticehurst collaborated with Mr. Witherby during part of the time.

It is satisfactory to see that for the great majority of species the notes made thirty years ago agree essentially with ours of 1939 and 1940, and, indeed, might have been made recently. Dates for species are mostly approximately the same; actual and estimated numbers have changed very little. For example, Chaffinches still occur towards the end of September, but the occurrence of a large flock of Tree Sparrows in early October, 1908, is without recorded counterpart in 1939. In 1909 Crossbills, a green bird on September 12th, and an adult male on the 23rd, were noted. Other species included in Mr. Witherby's notes and unreported for 1939-40 are the Yellow-browed Warbler (September 23rd and 30th of 1908); the Red-spotted Bluethroat on September 24th, 1908 (seven birds, and two on the following day); and a Nightjar on the same day. On October 14th, 1909, a Lesser Kestrel showed the characteristic white claws of its race. Among the Robins, the continental race was definitely recorded. Species recorded for 1939 and not mentioned in Mr. Witherby's notes include Red-breasted Flycatcher, Firecrest, and Barred Warbler.

Concerning the Wheatear, Mr. Witherby thought in 1908 that birds seen as late as early October might be resident birds, but the evidence seems to be insufficient. In the spring of 1939 we failed to find a proved local breeding pair.

Although accurate comparison is difficult, it would not appear that the flocks of waders have diminished in size very much excepting the Woodcock. Common Redshanks would appear to have increased. September 23rd was the date of the only Curlew-Sandpiper mentioned for 1909, and September 22nd the date of the party of eleven recorded for 1939. Under date October 27th, 1909, it was noted that there were a few Woodcock about, and characteristically all Kilnsea after them!

There is no doubt that Lapland Dunlin and Southern Dunlin are both included in the large flocks of this species to be seen at Spurn, but it is interesting to have a definite record of an adult male of the first named (*Calidris a alpina*) included in Mr. Witherby's collection of skins which was obtained at Kilnsea on July 5th, 1897.

FROM A MICROSCOPIST'S NOTE-BOOK

W. LAWRENCE SCHROEDER, M.A.

THE so-called rat-tailed larvæ of the dipterous Syrphid, *Eristalis*, the dronefly, are not the handsomest of the creatures that inhabit ponds and ditches. Their choice of environment signifies a low taste, for they prefer the rotten organic debris, often exceedingly smelly, of the pond floor, towards the edge of the land. I have taken them from water that even a thirsty cow might disdain as not fit for consumption. Yet the larvæ have their charm: disengage them from their muddy circumstances, gently clear away with a camel-hair brush the filthy stuff that cloaks their beauty, set them in a dish of clear water, and watch them try to scramble on the smooth surface of the dish with their seven pairs of ventral pro-legs, while the long spiracular tail seeks to penetrate the surface-film of the water; and sighs of admiration will gently emerge.

The body of a full-grown larva is about 1 in. in length; but the telescopic tail may extend nearly 3 in., for in its retracted state it may be over an inch in length.

Larvæ that I collected on October 25th from a little pond near Halifax, provided considerable interest. For microscopic purposes I placed some in a solution of 2 per cent. formalin and 2 per cent. glacial acetic acid; four days later one was still alive and another had pupated: the breathing apparatus had apparently been effective. The rest of the living larvæ were put into a jar of water, with earth from the garden: the water was just deep enough to allow the larvæ to move in the mud with the spiracular tube extended to the surface, but curiously enough, very little use was made of the tube. Two of the larvæ kept close to each other, and would not be separated; they crawled over each other in an excess of affection. Some of the larvæ burrowed in the earth and for several days I saw no sign of them. I transferred the contents of the jar to an evaporating dish, where the earth spread out to less depth; the larvæ showed movement, but they kept their tails under the surface of the water. Apparently the anterior spiracles took the needed oxygen from the water itself.

In the middle of December, signs of life had vanished, but on seeking through the mud I found three of the larvæ which had burrowed into a bunch of vegetable fibre and earth. On being rudely disturbed they lengthened their tails and therewith sought the surface of the water. On February 28th three of the larvæ were still alive. They achieved an inglorious immortality by immersion in a preservative fluid. The larvæ can stand a fair amount of buffeting; one that

seemed dead was poked about and pushed here and there for nearly a quarter of an hour before resenting such attentions by a movement away from the brush.

A small Brown Cypris—c $\frac{1}{50}$ in. long and c $\frac{1}{85}$ in. broad—was put in a minute hanging-drop of water, just sufficient to make it feel it was not altogether out of its element. Two and a half days later it was still alive; two pellets of excreta testified to continuous digestive activity, but the case was closed: it was only when the light was strongly focussed through it that the quiescence of the creature was changed to activity: the reaction was definite.

NESTING OF THE LITTLE TERN IN LANCASHIRE

ERIC HARDY

It is interesting to note that despite the steady decline of the Common and Arctic Terns at Ainsdale, Lancashire, the Little Tern (*Sterna a. albifrons*) has recolonised the haunt after some fifteen years. At Whitsuntide Mr. D. Shackleton, of the Merseyside Branch of the B.E.N.A., told me he had marked down a Little Tern on three eggs at Ainsdale and next day I was able to photograph the birds at the nest. The species nested in 1938, but the keeper told me the nests were robbed. On June 4th, 1939, he told me there were three nests; they had laid earlier than the Common Terns, which were somewhat late in laying this year. The position of the Little Terns was interesting, for they had a nest in the middle of the shore sand where thousands of holiday-makers and motorists crowded round and we considered it hopeless that their eggs could survive Whit Monday in the middle of a crowded beach. Yet they escaped detection, and a ring of sticks placed in the sand around the nest caused the motorists who race along the sands to steer around and avoid them, thus saving the nest. The bird sat close even when motors and motor cycles passed within a couple of yards, but flew off in alarm at the near approach of humans. The nesting is a further example of the extension of bird-life which would accrue from the authorities' affording quieter conditions on the Ainsdale beach instead of the present extension of motoring and Lido facilities.

The Entomologist for March contains 'Butterflies in Caithness during 1939,' by S. Swanson; 'A new species and two new subspecies of *Melitæa* (Lep. Nymphalidæ),' by L. G. Higgins; 'Notes on the synonymy of some genera of European *Pimplinæ* (s.l.) (Hym. Ichneumonidæ),' by J. F. Perkins; '*Acherontia atropos* in West Sussex during 1939,' by L. G. Hulls; 'A new British agrotid; *Procus versicolor* Bkh.,' by C. G. M. de Worms; 'Migration records (Supplementary, 1939,' by Capt. T. Dannreuther; 'The description of *Hodotermes ubachi* Navas, 1911 (Isoptera),' by F. J. Griffen; and several shorter notes and observations.

ON THE BIRDS ABOUT A PART OF THE SOUTHERN COUNTY BOUNDARY OF YORKSHIRE

A Survey of the Levels between Hatfield and the Idle, 1929-1939

RALPH CHISLETT, M.B.O.U.

[Being the Presidential Address (illustrated) to the Yorkshire Naturalist's Union, at Leeds University, December, 2nd, 1939].

TEN years ago, for my local work from home, I selected an area of country with the intention of making a survey of the breeding birds there. The intention has been fulfilled fairly completely. The summarised result is put forward as a small contribution to the regional, distributional, ecological knowledge of Yorkshire birds. It is the sort of contribution anyone can make, but which cannot be made by merely occasional visits to a district ; can only be made by systematic search of every type of habitat, several times in a season, over a period of years. For a number of the ten years my wife and I had the valuable help and companionship of Mr. C. G. des Forges, now of Brighton.

The area is bounded to the south by the River Idle. It lies westward of the slightly raised ground known as the Isle of Axholme. The Finningley-Hatfield road runs through the verge of the western boundary. Lindholme and Hatfield Moor are included, but just beyond the moor is the northern boundary, the road from Hatfield to Sandtoft, some two miles south of the Stainforth and Keadby Canal. Included in the area is a wedge of Nottinghamshire, and a strip of Lincolnshire ; but all the breeding birds but one, out of 82, have been proved to breed in the main Yorkshire portion. The only villages included are the isolated ones of Wroot and Misson. The total area measures some 45 sq. miles.

Prior to the great drainage scheme of Cornelius Vermuyden, begun in 1626, the country was mainly marsh, and was the haunt of immense numbers of wildfowl, and of species long since vanished, such as the Ruff and Godwit. Old books mention the 'moor-buzzard' there, no doubt one of the harriers. Now, old farmsteads stand where waters once flowed ; rivers follow different, straighter courses ; and do not always flow in the same direction. The history of the drainage makes an interesting story, but has no part in this paper. The indenture signed by Charles I and Vermuyden, whereby the Dutchman began his scheme for drainage, can still be seen. Vermuyden had much trouble with the marshland dwellers, and there were numerous riots. During the last ten years I have myself heard local inhabitants speak contemptuously of 'those Dutchmen,' but the reference was to the peat-cutters of to-day. For my information about the history of the district I am mainly indebted to a book entitled *The Level of Hatfield Chase, and parts adjoining*, by John Tomlinson, published in

1882. How much more interesting to me would have been the reports of a Recorder for birds in those early years. The drainage is now partly under the control of the Trent Catchment Board; and partly under that of the Hatfield Chace Corporation, to which body I am indebted for permission to pass along the banks of all their dykes and waterways.

Over much of the area the soil is peaty and deep, in which celery does well. Sand and gravel beds occur at Lindholme, and to the south of the area, parts being worked for road material, etc. There are one or two dense coniferous woods and some small deciduous and mixed woods. The extensive, self-sown birch woods have been sadly spoiled of recent years by fires, which raced across, burning the old bracken and heather, laying hold of the peat in many places, where it smouldered for weeks, and undermined the trees, bringing them down. Under beehives raised sufficiently above ground the fire passed quickly without harming the hives; hives raised very little caught fire. Two years later birch scrub was springing up everywhere; but Hatfield Moor in my time will never again be as it was ten years ago.

I have listed 22 different types of habitat available for birds in this flat country. Most types are in continual process of change, and the bird life follows the changes. A few of the changes may be due to actions of birds such as the bushy nature of some areas, others to gradual growth, to human action, agricultural and military, and to weather conditions. Birds which like the vicinity of small bushes leave when the bushes grow too big for their requirements, and other, large birds, appear. Aeroplanes droning overhead make no difference, but the establishment of an aerodrome and a bombing ground do. The list of types of habitat follows:

1. Open, cotton grass or heathery moorland dotted with clumps of birches. The bird life on this ground is sparse but interesting—a few Mallard and Teal, Blackcock still exist, a few Pheasants and Partridges, a pair or two of Nightjars and Whinchats, one or two pairs of Curlews and Long-eared Owls, together with some Skylarks, Pipits and Willow-Warblers. Parts of this ground are being worked for peat.
2. Open and fairly dry pasture.
3. Open arable land.
4. Open water, of which there is one large pond, fringed with reed, rush and bushes, of small use to water birds since farm youths use a clumsy boat upon it.
5. Wet ground given over almost entirely to rushes in which there is little bird life beyond an occasional Snipe, Reed-Bunting or Duck.
6. Wet, grazed land on which the rush is controlled so that

there is an equal or greater area of grass. Redshank, Snipe, Lapwing and Skylark nest here.

7. Marshy ground, variably flooded, and with some permanent pools surrounded by reed, sedge, reed-mace, rush, iris, etc., frequented by Ducks and wading-birds, Reed-Buntings, and Sedge-Warblers.
- 7a. Narrow open dykes with occasional bushes on the banks. Yellowhammers, Whitethroats and Hedgesparrows use the bushes ; Waterhens nest on the banks.
8. Narrow dykes, partly grown with reed and other water plants, favourite nesting haunts of Waterhens.
9. Narrow dykes overgrown with tangles of briar and bramble, through which reeds and rank grasses grow. When such overgrown dykes are near to woods, small birds nest commonly, but less numerous if they are far out in the open.
10. Broad drain largely overgrown with reed, willowherb, etc., and with some willows. Such is the habitat of the only Reed-Warbler colony, and many other small species nest along it.
11. Dense thickets of dwarf willow and birch on low ground usually flooded knee-deep in spring. There are few birds here except Mallard, Teal and Waterhens ; but Redshank, Lapwing, Curlew and Snipe inhabit the nearby grassland.
12. Bushy ground left uncultivated for years, but grazed by cattle, with old and young thorns, bramble, briar and odd gorse. Many small birds nest here, but become fewer when the bushes grow into trees, and are replaced by Magpies, Owls and Doves.
13. Uncultivated, ungrazed ground of rank, matted grass and other plants, intersected by reed-grown dykes, with few bushes. Few birds occur here—perhaps the growth is too rank, and the bushes insufficient. Short-eared Owls may hawk in winter, Grasshopper-Warblers sing in early spring. Occasional nests are found of Mallard and Teal, Pipit, Skylark, Willow-Warbler, Whitethroat, Whinchat, Yellowhammer.
14. Straggling old, narrow, wild woodland of birch, alder, oak, beech, pine, etc., with undergrowth of heather, reeds, thin grass, some bushes and with some bare peat ; and with many decaying stumps for Tree-Sparrow, Tits, Flycatcher, etc. Little owls also nest here, and here is the only Rookery. The Carrion Crow and the Kestrel nest.
15. Tall birch and bracken, with occasional bushes, tall sweet-gale, etc. Here Long-eared Owls nest on the ground, Wood Pigeons are numerous, Jays and Sparrowhawks occur, and a few common small birds, while Willow-Tits bore in the many stumps.

16. Young plantations of spruce, pine, birch, and oak, with bramble, briar and gorse in the clearings. This type is rich in Thrushes, Finches and Warblers, with Turtle and Ring Doves common.
17. Old mixed woodlands, with undergrowth, have the normal covert population, including Warblers, and occasionally Nightingales.
18. Coniferous woods, without undergrowth, and with scarcely any bird life except Wood Pigeons.
19. Ground quarried for gravel, and abandoned, with water in the deep places, beside which rushes and other plants soon appear. Redshanks and Lapwings come to feed. Waterhens, Reed-Buntings, Pied Wagtails and Sand Martins nest, with occasionally a Mallard.
20. Small plantations near to farms have the bird life usually found in such places.
21. Hedgerows, with trees occasionally, and in clumps, usually birch, which when holed may house Tree-Sparrows, or Jackdaws, and Titmice. Magpies nest in the tall hedges. When reeds grow up into the hedge and add to the cover small birds may nest numerously.

Ornithologically it should be remembered that no part of any of these types of habitat is many hundred yards from a dyke, and most parts much less. The wet nature of the ground causes many trees to rot and decay before they reach their prime, resulting in many soft stumps, and possibly in the plentitude of Willow-Tits. For ten years we have explored every type of habitat systematically and regularly in the breeding season. Afterwards our visits have only been occasional so that although I have included such winter visitors as we have seen, the list of such cannot be complete.

As regards breeding birds, there are no very rare species included. A good part of the interest of the area is derived from the varied types of level habitat. One can catch suggestions here and there of the character of the place prior to the drainage, particularly in the odd corners of still wild land. Our list of breeding species totals 82. May 14th, 1933, when we found nests with eggs of 16 species in the day, was an exceptionally good day; all were left to hatch, as is the case with every other nest found in the ten years.

LIST OF SPECIES, WITH STATUS, ETC.

THE CARRION CROW (*Corvus c. corone*). A few pairs breed, some being shot; successful breeders have usually nested in hedgerow-trees, conifer or oak, on the unkepered, cultivated land.

THE HOODED CROW (*Corvus c. cornix*). A regular winter visitor in small numbers.

THE ROOK (*Corvus f. frugilegus*). There is one scattered colony, or rather three small colonies, in a thin, old plantation rather more than a mile in length.

- THE JACKDAW (*Corvus monedula spermologus*). Breeds in several places where the decayed timber is sufficiently big ; and in roofs of out-buildings and disused chimneys.
- THE MAGPIE (*Pica p. pica*). Fairly numerous, building mostly in the hedgerows ; and occasionally in the woods and old thorn-bushes.
- THE BRITISH JAY (*Garrulus glandarius rufitergum*). Nests regularly in the thin natural woods fringing Hatfield Moor, often in birches. Also more occasionally in the preserved woods.
- THE STARLING (*Sternus v. vulgaris*). Very common, nesting in the farm buildings and in holes in trees. Often expropriates the Woodpeckers.
- THE GREENFINCH (*Chloris c. chloris*). Not numerous, but a few pairs breed in the bushy areas and in hedgerows near to farms.
- THE BRITISH GOLDFINCH (*Carduelis c. britannica*). Not common but the bird can be noted in a number of places. I have seen the nest in tall roadside trees. Is most often noticed in August and September when thistles are in seed.
- THE SISKIN (*Carduelis spinus*). I have seen the species several times in small parties in the winter months.
- THE LESSER REDPOLL (*Carduelis linaria cabaret*). Odd pairs may be seen in many places in spring, twittering as the birds undulate between high tree-tops above bushy ground, away from which it is seldom seen. In one young plantation in 1935 I saw three nests in young spruces. A nest in 1938 was in a young oak only 3 ft. high. The nest is not often found and many must be among the more highly placed foliage. The species also occurs in winter.
- THE LINNET (*Carduelis c. cannabina*). A common breeding species on the bushy ground, less common when the bushes grow tall. Varies curiously in its time of arrival from early to late April, but begins to nest at once, and continues with successive broods until late summer. I can always find several occupied nests in August. The bird is rarely seen in the winter months.
- THE BRITISH BULLFINCH (*Pyrrhula p. nesa*). Resident all the year ; breeding not uncommonly in several localities. I have seen nests in thorn-bushes, young pines and firs, in gorse, and once in elder ; generally, but not always, with some shade from taller trees.
- THE CHAFFINCH (*Fringilla cælebs gengleri*). A very common resident. In May, 1934, my wife found nine nests along one plantation. Nests wherever there are bushes or trees.
- THE BRAMBLING (*Fringilla montifringilla*). Flocks are seen not uncommonly in winter, in hedgerows, and in stubble through which they advance together producing a loud rustle.
- THE HOUSE SPARROW (*Passer d. domesticus*). Abundant round the farms.
- THE TREE SPARROW (*Passer m. montanus*). A regular breeder, arriving late in April. The same clumps of birches containing suitable holes and the same holes are resorted to yearly. Odd pairs are sometimes met. A few pairs nest in holes in walls of outbuildings of a few farms. In one long, straggling, natural plantation with much decayed birch, a colony exists of some 15-20 pairs. The first nests have eggs by mid-May. Second broods are being reared in early July. I have known the species to utilise old nesting-holes of the Willow Tit. The very local distribution is illustrated by the fact that we had been working the selected area for several years before we discovered this species here.
- THE CORN BUNTING (*Emberiza c. calandra*). There is no real colony, although several cocks sing yearly in a small number of fields in one or two places. Odd occasional birds can be heard at wide intervals in the cultivated area. Just outside our area, on some raised ground, a number of birds breed. I have not proved the species to be polygamous in this area, although I have in a colony situated south of the Idle.
- THE YELLOWHAMMER (*Emberiza c. citrinella*). Common and resident, breeding almost anywhere.

- THE REED BUNTING (*Emberiza s. schoeniclus*). Generally distributed, and very common in the rush, sedge, and bushy areas, and in the wet fields. Nests from late April until early August. Few birds are to be seen in winter. In late July, 1939, I found a breeding pair, the hen of which was almost indistinguishable from the cock.
- THE SKYLARK (*Alauda a. arvensis*). Generally distributed in the open country. Nests may be found from late April until early August.
- THE TREE PIPIT (*Anthus t. trivialis*). A fairly plentiful summer visitor and well distributed in the vicinity of trees.
- THE MEADOW PIPIT (*Anthus pratensis*). Somewhat uncommon and much less generally distributed than the Tree Pipit.
- THE YELLOW WAGTAIL (*Motacilla flava rayi*). A somewhat uncommon summer visitor. A few pairs breed in the fields. I have seen young only just out of the nest, but have not found a nest with eggs in the area.
- THE PIED WAGTAIL (*Motacilla alba yarrellii*). Generally distributed but not very numerous, nesting in the dyke-sides, in the dyke bridges, in farm stacks, and among tree roots.
- THE TREE CREEPER (*Certhia familiaris britannica*). Decidedly scarce, but the bird is seen occasionally and has been known to nest there.
- THE BRITISH GREAT-TITMOUSE (*Parus major newtoni*). A common breeder, generally distributed, breeding in holes in trees of all kinds. I have known the species to use an old Willow Tit-boring into a stump open at the top, down which the eggs could be seen.
- THE BRITISH BLUE-TITMOUSE (*Parus c. obscurus*). Common and generally distributed.
- THE BRITISH COAL-TITMOUSE (*Parus ater britannicus*). Decidedly scarce; odd pairs are sometimes seen in the neighbourhood of the conifers.
- THE BRITISH WILLOW-TITMOUSE (*Parus atricapillus kleinschmidtii*). A common species breeding almost anywhere. I have found the nest most often in decayed birch stumps, easy for the bird to excavate. But old elder, alder, and thorn-wood are also used, the outer surface of the wood being sometimes quite hard. I have never known the species to use an old boring. If a stump is used in a second year, a fresh boring is made. Indeed more than one boring is often made before the hen lays. Tree-sparrows, Redstarts, Blue-Tits, Great Tits, and even the Common Wren will make use of an old Willow-Tit boring; and once a Hedgesparrow, and probably other species too.
- THE BRITISH LONG-TAILED-TITMOUSE (*Aegithalos caudatus rosaceus*). Fairly well distributed in a few of the bushy areas and in hedgerows, sometimes nesting at a good height, at other times in a 3-foot gorse bush.
- THE BRITISH GOLDCREST (*Regulus r. anglorum*). Heard and seen frequently about the conifers in winter; but only odd pairs remain to breed.
- THE SPOTTED FLYCATCHER (*Muscicapa s. striata*). Breeds regularly but seldom commonly. Varies yearly in numbers, and does not show the partiality for proximity of buildings that the species shows in many districts, perhaps because there is ample decayed tree accommodation as well as a plentitude of flies everywhere.
- THE WILLOW-WARBLER (*Phylloscopus t. trochilus*). A very numerous breeder everywhere. It is not uncommon to see a nest in a bush. I saw one 5 ft. high in a young pine tree in 1939.
- THE WOOD-WARBLER (*Phylloscopus s. sibilatrix*). Decidedly scarce. I have only heard a cock singing in the area on rare occasions.
- THE GRASSHOPPER-WARBLER (*Locustella n. naevia*). Occurs every year in a number of places in late April and May; but most of the singing cocks pass on after a few days. Decidedly scarce as a breeder.
- THE REED-WARBLER (*Acrocephalus s. scirpaceus*). There is one considerable colony in a reed-grown drain, well known to a female Cuckoo. Elsewhere I have only seen the bird once. I have seen eggs being incubated from late May until late July. This colony lies in the wedge of Nottinghamshire that forms part of our area.

- THE SEDGE-WARBLER (*Acrocephalus schænobæus*). Abundant, nesting in sedge, reed, rush, bush, grass, or hedgerow. One of the most characteristic birds of the area. Nests may be found from May into July and early August.
- THE GARDEN-WARBLER (*Sylvia borin*). Thinly distributed in the deciduous woodlands and bushy places.
- THE BLACKCAP (*Sylvia a. atricapilla*). Occurs in the same areas as the preceding species, but more sparsely.
- THE COMMON WHITETHROAT (*Sylvia c. communis*). An abundant breeder in the reedy dykes, bushy ground, and edges of the woodlands.
- THE LESSER WHITETHROAT (*Sylvia c. curruca*). Very sparsely distributed but may be noted occasionally.
- THE FIELDFARE (*Turdus pilaris*). Flocks are often seen in winter, especially in early spring; can be seen and heard in May in most years—my latest date is May 10th.
- THE MISTLE-THRUSH (*Turdus v. viscivorus*). Generally but sparsely distributed; not nearly so common anywhere as I know it in a number of places along the slopes of the Southern Pennines.
- THE BRITISH SONG-THRUSH (*Turdus e. ericitorum*). Abundant to the edges of the moorland.
- THE BLACKBIRD (*Turdus m. merula*). Abundant, but probably slightly less numerous than the Song-thrush.
- THE REDWING (*Turdus musicus*). A regular winter visitor, in flocks. It is not seen so late as the Fieldfare as a rule.
- THE WHEATEAR (*Oenanthe o. Oenanthe*). Sometimes seen in early spring. My latest date is May 2nd, 1938, when a hen was seen to enter a rabbit hole with a feather; but a few days later there was no sign of the bird. I have not proved the species to breed there.
- THE WHINCHAT (*Saxicola r. rubetra*). Nests in a number of places both on the heathery ground (near to bushes), and on uncultivated rank grass also with some bushes nearby. Adheres to the same spots year after year until the habitat changes by growth of the bushes. Usually there are two or three pairs together.
- THE REDSTART (*Phoenicurus p. phoenicurus*). Occurs sparsely, mainly about the slightly higher, sandy areas, nesting both in old walls and in old trees.
- THE NIGHTINGALE (*Luscinia luscinia*). A local and irregular breeder in the edges of woods and copses. In some years (as in 1934) there may be several pairs along one plantation, and odd pairs in several other places. In other years it may be difficult to find a breeding pair, although a year seldom passes without one or two cocks being heard to sing.
- THE BRITISH ROBIN (*Erithacus rebecula melophilus*). An abundant breeder.
- THE BRITISH HEDGESPARROW (*Prunella modularis occidentalis*). An abundant breeder. One nest was seen in a low, hollow stump that Willow-Tits had used the previous year.
- THE WREN (*Troglodytes troglodytes*). Common everywhere, nesting mainly in the sides of growing trees and in bushes. I have twice seen a nest tucked into the confined space provided by an old Willow-Tit hole. In spite of a remark in the *New Handbook of British Birds* I have known both sexes of the Wren to bring food to nestlings.
- THE SWALLOW (*Hirundo r. rustica*). Nests fairly numerous in out-buildings of some farms and under some bridges.
- THE MARTIN (*Martula u. urbana*). Not nearly so numerous as the Swallow, but some pairs nest on some of the farms and cottages.
- THE SAND MARTIN (*Riparia r. riparia*). Rather scarce but a few pairs breed in the abandoned gravel-pits.
- THE SWIFT (*Apus a. apus*). Not numerous, but its habits make it conspicuous, and a few pairs nest in the roofs of farms.
- THE NIGHTJAR (*Caprimulgus e. europæus*). A few pairs nest in the

- birch and bracken areas ; but the species is decreasing, possibly as a result of the fires that have occurred.
- THE KINGFISHER (*Alcedo atthis ispida*). Curiously scarce along the dykes, which, however, generally have unsuitable sides. I only know it on one dyke-side.
- THE GREEN WOODPECKER (*Picus viridis pulvius*). Sparsely distributed. I have known nesting-holes in the area in birch, oak, alder and ash. Is much victimised by Starlings which remove the Woodpecker's eggs and place them, often unbroken, on the ground nearby before laying their own.
- THE BRITISH GREAT SPOTTED WOODPECKER (*Dryobates major anglicus*). Not very common but more so than the preceding species, usually boring into tall birch-stumps.
- THE CUCKOO (*Cuculus c. canorus*). Generally distributed, laying eggs in nests of Reed Warbler, Whitethroat, Hedgesparrow, Tree-Pipit and once Pied Wagtail. In 1939 a Cuckoo's egg in a Reed-Warbler's nest was probably laid on July 11th, which means the offspring would be still in the nest in August.
- THE LITTLE OWL (*Athene noctua vidalii*). Fairly common in types of habitat containing old trees. Nests above ground or below it ; and sometimes in stacks of peat.
- THE LONG-EARED OWL (*Asio o. otus*). The most numerous owl of the area. I have seen eggs in old nests of Magpies, Crows, and Wood-pigeons ; but in this area at least as often the species nests on the ground, underneath tall dead bracken, generally where such surrounds a stump.
- THE SHORT-EARED OWL (*Asio f. flammeus*). A regular winter visitor, sometimes several being visible at once. The only recent breeding record of which I am aware refers to May, 1924, but I suspected a pair of breeding in 1939, when I saw them in late April and again in June.
- THE BRITISH TAWNY OWL (*Strix aluco sylvatica*). Disturbed fairly often from old timber in which it nests ; also occasionally in old nests of the Magpie.
- WHITE-BREASTED BARN OWL (*Tyto a. alba*). A few farms have a pair in their outbuildings ; sometimes also disturbed when roosting in woods, and from old stumps in which also occasionally it nests.
- THE KESTREL (*Falco t. tinnunculus*). The species holds its own in spite of being shot in the kept areas. Breeds successfully in old Crow and Magpie nests in hedgerow trees, and in the old woodlands. Very fond of isolated pine trees.
- THE MONTAGU'S HARRIER (*Circus pygargus*). I have seen the species, an odd female, flying over cornfields in June and July, but have no proof of breeding during our ten years' period.
- THE HEN HARRIER (*Circus c. cyaneus*). A regular visitor in winter, and often visible until late March.
- THE SPARROW-HAWK (*Accipiter n. nisus*). Less numerous than the Kestrel, but one or two pairs breed yearly, generally in oak or birch.
- THE COMMON HERON (*Ardea c. cinerea*). The nearest heronry is some five miles beyond our southern boundary ; and the species may be disturbed from any of the dykes at any time of the year.
- THE MUTE SWAN (*Cygnus olor*). Breeds on a dyke which does not dry up in summer, as so many of the dykes do.
- GREY GEESE are seen occasionally in winter, probably pink-feet from the Humber area.
- THE MALLARD (*Anas p. platymyncha*). Fairly numerous. Odd pairs are often disturbed in March. In dry weather, when the ducks are sitting in April or May, 15 or 20 drakes may be disturbed from water-filled dykes and pools. May nest almost anywhere, including hollows in the hillocks of the disused gravel-pit areas.
- THE TEAL (*Anas c. crecca*). The commonest breeding duck, nesting in heather, grass, bracken, in bushy fields, and almost anywhere, since

- dykes are always near. A Teal duck and her flotilla of ducklings is a common sight in June on the wider dykes. Flights in late summer may number up to 60 or 80 birds.
- THE GARGANEY (*Anas querquedula*). I have only identified the species once—a drake on April 23rd, 1938.
- THE SHOVELER (*Spatula clypeata*). I have seen the drake flying over marshy ground where I suspected a nest; and a pair of Shovelers swimming on a dyke in May.
- THE TUFTED DUCK (*Aythya fuligula*). I have only seen the species on one occasion—a drake in company of Mallard ducks. It is probable that the Pochard and perhaps other ducks are occasional winter visitors.
- THE GREAT CRESTED GREBE (*Podiceps c. cristatus*). There is only one suitable sheet of water. The last nest found there was in 1935, and desertion was caused by farm boys fishing from a boat.
- THE LITTLE GREBE (*Podiceps r. rufficollis*). Odd pairs nest in several places on pools, and occasionally in dykes.
- THE WOOD PIGEON (*Columba palumbus*). Extremely abundant at all seasons. Nests, often only a few feet high, may be found in all types of wooded and bushy ground, and in hedgerows. They may be found from late March until September; and I found a nest containing two half-grown squabs as late as October 15th, 1939.
- THE STOCK DOVE (*Columba aenas*). A very few pairs breed yearly in old Magpie nests, and in holes in trees.
- THE TURTLE DOVE (*Streptopelia t. turtur*). Quite common in the wooded and busy areas. Nests vary in height from 5 to 8 ft. above ground; and are often in young pines and thorn bushes. In most years we have seen from 8 to 12 nests without special search.
- THE GOLDEN PLOVER (*Charadrius apricarius*). Flocks are seen occasionally in winter and early spring.
- THE LAPWING (*Vanellus vanellus*). Abundant. Breeds impartially on the grassed and arable land, and in the rushy fields when good patches of grass alternate with the rushes. Crops are often high above them before the young leave. From July onwards flocks are common; and are largest in February to March, when the migrants are waiting to move, by which time fields have also their quotas of paired breeding birds.
- THE COMMON SANDPIPER (*Tringa hypoleucos*). An occasional passage migrant in spring and autumn.
- THE GREEN SANDPIPER (*Tringa ochropus*). Have seen the bird twice in winter but it probably occurs more commonly than these records suggest.
- THE COMMON REDSHANK (*Tringa t. totanus*). Sparsely but not uncommonly distributed over the area as a breeder, nesting in the wet fields and on the marshy ground. Feeding birds may be disturbed from any of the pools and dykes. Is seldom seen or heard after August until the following March.
- THE COMMON CURLEW (*Numenius arquata*). Some half-dozen pairs still nest yearly on the moorland, and in the marshy fields. A nest was found in 1936; and I saw young birds unable to fly in 1937. The spring notes can be heard from any point. Leaves the district when the young can fly.
- THE WHIMBREL (*Numenius phaeopus*). I have not seen the species in the area, but Mr. A. Hazelwood saw a small party in May, 1932.
- THE COMMON SNIPE (*Capella g. gallinago*). Breeds in considerable numbers in the marshy fields; and is almost the only breeder in the areas given over to rush; but varies yearly in numbers. In wet seasons, open pasture which has become partially waterlogged is used. Feeding birds may be disturbed from any of the dykes and pool sides. I have found nests with eggs from late March until early July. Much less numerous in autumn and winter although not uncommon even then.

- THE WOODCOCK (*Scolopax rusticola*). A very few birds 'rode' above one or two woods and plantations; and the nest is seen occasionally by the keepers. Occasional odd birds may be flushed at any time of the year.
- THE BLACK TERN (*Chlidonias n. niger*). Occasionally seen in spring as a passage migrant. I saw a male hawking for insects above the large pond on May 16th, 1936. No doubt the species also occurs occasionally in autumn, but I have not seen it then.
- THE BLACK-HEADED GULL (*Larus r. ridibundus*). Odd birds may be seen at any time of the year; but I have only seen parties of any size in spring—probably visitors from the Lincolnshire, Twigmoor colony. A number of pairs nested in 1932 on some flooded land.
- THE HERRING GULL (*Larus a. argentatus*). I have seen the species passing over in early spring and late summer.
- THE LAND-RAIL (*crex crex*). I have only once heard the species during the ten years period (June 4th, 1937). Formerly I am told it was a common bird there.
- THE WATERHEN (*Gallinula c. chloropus*). Commonly and universally distributed, nesting along and in all the dykes, and by all the pools, and in some of the wet fields. I have found eggs being incubated from late March until early August. By mid-summer some of the drains are dotted with large nests for the convenience of early broods while one of the parents is incubating a second laying.
- THE COOT (*Fulica a. atra*). Only an occasional breeder in the broader dykes close to pools, and around the large pond. Decidedly scarce. Parties occasionally visit the pools in winter.
- THE BLACK GROUSE (*Lyrurus tetrrix britannicus*). I have seen the bird occasionally on the heathery moor but it is very scarce.
- THE PHEASANT (*Phasianus colchicus*). Wild birds nest fairly commonly, and some birds are reared in two places.
- THE COMMON PARTRIDGE (*Perdix p. perdix*). Conspicuous in pairs on the roads and bank tops in spring and summer. Breeds fairly numerous over the area.
- THE RED-LEGGED PARTRIDGE (*Alectous r. rufa*). A resident species but much less numerous than the previous species.

That exhausts the species I have seen in the area myself. They total 104 species, of which 82 have been proved to breed. With increased attention to the winter months I know that the list would be extended. *The Birds of Yorkshire* includes records for this area of migrant species that we have not seen during our ten years period, which more continuous winter observation might have revealed. Our main aim has been to make the list of *breeding* species complete, with adequate notes of status, and of habits and habitats that obtain under the special conditions of the area. The information we have compiled is such as it seems to me is wanted from all districts in Yorkshire, for the revision of the status and distribution of Yorkshire breeding birds, needed to bring *The Birds of Yorkshire* up to date in this respect. A number of lists from other districts have reached me, and I thank those who have sent them. There are others still to come. No one knows the fascinations of weeks passed with unusual species in far places better than I, but systematic work in our own districts can be quite as useful, and almost as interesting.

NOTES ON BIRD LIFE DURING THE RECENT FROST

W. J. CLARKE, F.Z.S.

AN unfortunate attack of influenza kept the writer indoors during most of the severe weather experienced in January and February, 1940, and during the greater part of that period observations were not possible. Very large numbers of wild fowl—swans, geese, ducks and waders—were reported along the shore at Scarborough. On February 13th approximately 350 Scaup and 5 Swans were sheltering in the harbour, and 2 Glaucous Gulls were also reported there. On the 17th the writer took his first walk to the Scarborough Mere with disappointing results. Most of the lake was frozen over. Resting on the ice in a close bunch were about a dozen Mallards, the only other duck seen was a female Pochard. There were three Coots and about 100 Common and Black-headed Gulls. A single Carrion Crow was lying frozen stiff in the snow.

At the fishpond in the Ramsdale Valley on the same day were about 50 Mallards, including a handsome albino drake, possibly the same bird which was there a year ago. There were also a pair of Tufted Ducks and many Black-headed Gulls.

In the Harbour on the same afternoon, about 150 Scaup were diving, and among them were two beautiful adult Long-tailed drakes, a species for which there are very few local records. A single Glaucous Gull in the pale cream plumage of the second year was present and stayed for several days. A single Shag was fishing and doing very well, mostly with Viviparous Blennies.

In the walk along the sands from the Aquarium to the Pier, the following dead birds were found, all but one which was oiled, having apparently died of starvation: 1 Razorbill, 2 Guillemots, 2 Shags, 2 Scaup, 1 Common Scoter, 1 Ring Dove, 1 Redshank, 1 Starling, and 55 Gulls, all of which were Common or Black-headed, with the single exception of a Great Black-backed Gull.

On February 19th, about 50 Scaup were still in the harbour, 20 on the 22nd, and 19 on the 24th. A Little Auk was picked up alive in a Scarborough street on the 19th.

A ringed bird, reported in the press as a Snipe, was picked up at Filey on January 25th. It turned out to be a Dunlin, and had been marked on passage at Jaeren, South Norway, on September 9th, 1939.

Scaup still lingered in the harbour after the frost had gone, 16 were there on March 6th, and on that day I found the remains of a Bean Goose on the south sands. It was little

more than a skeleton and the legs and feet had disappeared, but the deep orange band across the otherwise all black beak made identification certain. We have only three previous local records for this goose during the last 50 years.

18 Scaup were in the harbour on March 9th, together with an adult Shag bearing a well-developed crest, and 4 Scaup ducks were there on March 16th, 2 males and 2 females.

REVIEWS AND BOOK NOTICES

Bushveld Adventures, by Victor Pohl, pp. 256. Faber & Faber, 8/6. This is a really first-hand account of adventure in the South African bush. The writer was born on the frontier of Basutoland. He might have well become famous as a hunter of big game, but his tastes lie more in the direction of close observation of wild life rather than its destruction. Mr. Pohl has a most charming and natural style of writing and the reviewer read the book from cover to cover at a sitting. Exciting adventures are always best set forth in simple and unaffected language and this exactly describes Mr. Pohl's effortless narrative. His is a book to read aloud to the fireside group at home or at camp.

Easy Lessons in Nature Study, in 4 Books, by David Williams and W. Campbell, approximately 100 pages in each book, very copiously illustrated. Oxford University Press, prices respectively 1/6, 1/9, 1/10, 2/-. These charming little books form together a carefully graded series of readings entirely suited to children of from 7 to 11 years. Every aspect of nature is dealt with and every lesson is illustrated by well-chosen pictures and diagrams. The photographs of birds include some of the best by well-known photographers. Each chapter closes with a list of 'Things you can do.' These lists are obviously the work of experienced teachers, and they are a most valuable addition to the skilled work in the chapters themselves. The volumes are attractively bound and are very good value.

The Oxford Nature Readers (in Four Books), by F. H. Shoosmith, B.Sc., Ph.D., pp. (I) 96, (II) 128, (III) 136, (IV) 144, all very well illustrated with many photographs and drawings and with coloured plates. Oxford University Press, prices respectively 1/6, 1/9, 2/-, 2/3. The author, in his preface to these four volumes, says that they form 'a graded series of brief studies, mainly of living things, intended to interest children in what lies round them, to minister to their insatiable curiosity, and to stimulate in them the habit of observation.' We think his claims are very modestly stated. All four books are most attractively got up, they are well written, accurate, and graded with great skill. A normal child reading under wise direction will want to go beyond the book to nature itself. The ability to write in this way is all too rare, so that to make such a statement may perhaps be taken as the highest praise. At the end of each chapter are things to say and do. One of these items taken at random from Book I is: 'If you draw a robin and colour it, what colour will you make its breast—scarlet, crimson, or brick-red?' From Book IV comes this one: 'Examine the gorse bushes in spring, and notice the *tender* green shoots. Keep a watch on them, and discover how long it is before these soft shoots change into hard spines.' These two are quite typical and are a sufficient indication of the usefulness of this method of encouraging first-hand observations. The illustrations are all good, and some of the coloured plates are very fine. The printing throughout is excellent.

SOME BIRD NOTES FROM THE COAST IN WINTER

G. H. AINSWORTH AND J. LORD

THE present winter must have been one of the most destructive of the century to bird life. The severe and prolonged frost, the deep snow, the heavy seas, and unusually large quantities of oil off the coast have all combined to make the losses heavy.

The seashore is one of the few feeding grounds on which snow and ice have little effect, and can be especially interesting at this time of the year. It was for this reason we spent two days in early February on the East Coast near Bridlington.

A strong easterly wind and the heavy seas had driven large numbers of ducks into the harbour. Swimming in these more sheltered waters were male and female Scaup, the white round the bills of the latter being very conspicuous, Tufted Ducks, Golden-Eyes, two Little Auks, Wigeon, Velvet Scoters, Common Scoters, a Red-throated Diver, and large numbers of Common Gulls, Herring Gulls, and Greater Blackbacked Gulls. The ducks appeared to be completely exhausted. One or two youths were shooting at them with air-guns, but the birds made no effort to escape. On the mud from which the tide had receded, Redshank, Dunlin, Ringed Plover, and Sanderling were feeding. On the uncovered rocks a large flock of Purple Sandpiper was noted and with them a few Redshanks, all unaffected by human presence.

Field glasses were hardly necessary on the sands. Flocks of Sanderlings, Dunlins, and Common Gulls allowed us to approach within a few feet before fluttering away for a short distance. Some Common Gulls were too distressed to fly and allowed us to pick them up. A pair of Common Scoters swimming on the broken water were left on the sand by the receding tide and made no effort to move when approached. In spite of efforts to revive them they very soon died. A little further out, Smews were observed, as usual, active ducks even under these conditions. Flocks of Mallard, Shelduck, and Tufted Duck passed overhead. One flock of Shelduck broke formation and dropped on the sea close to a number of geese of unidentified species. The following day a Bean Goose, which had been dead only a few hours, was picked up close at hand.

Further down the coast, the tale of desolation and starvation continued. On the high-water mark were dozens of dead Razorbills, Puffins, and Guillemots. Among them we identified a Great Crested Grebe, a Slavonian Grebe, Little Auks, Tufted Ducks, Common Scoters, Cormorants, Herring Gulls, and Common Gulls. Numbers of the bodies had been turned inside out—no doubt the work of the Greater Black-backed Gull.

Two Curlews, usually the wariest of birds, stood dejected as we approached, and an Oyster-Catcher, trying to shelter from the wind with bedraggled feathers, only flew away when touched.

Wood Pigeons, Carrion Crows, Rooks, Starling, and Rock Pipits were trying to find food among the wrack, and Ringed Plovers huddled behind piles of snow at the base of the cliff. Solitary Grey Plovers stood motionless on the beach and it was noticeable that the customary cries of the sea fowl were absent. That most remorseless enemy of the birds, frost, was causing havoc in that last refuge, the sea shore.

It will be interesting to see, in the breeding season, what effect these abnormal conditions have had on our resident birds.

FIELD NOTE

Slavonian Grebe and Smew at Swillington.—During a visit to Swillington on February 25th, H. Foster and I saw and heard a solitary Curlew which we considered an early date for this species inland, although probably on passage. On this occasion little else was seen, as a good deal of ice and extensive flooding from the river prevented the complete circuit being made as usual. We came again under better circumstances on March 24th, and the improved visibility and bright sunshine made it pleasurable to lie on the grass-banking with binoculars and telescope trained on the numerous waterfowl. On this occasion also we watched for long a Slavonian Grebe and the presence of numerous Coot and a few Great Crested Grebes made comparison in size easy and convenient. There seemed much activity among the duck, particularly the Shovellers, who 'quacked' and splashed, chased each other, and rose every so often for a circular flight over the assembled flocks of Wigeon, Pochard, Tufted Mallard and Teal. On the island of the larger sheet of water a female Smew reposed, enjoying perhaps the unaccustomed warmth. Our presence no doubt disturbed her, among all species of duck one of the wariest, and she soon placed a greater area of water between us. One Heron was seen where usually a dozen are counted, but the island was once more in the possession of the ubiquitous Black Headed Gulls. A noisy but cheerful thing on this fine spring day.—V. S. CRAPNELL.

NEWS FROM THE MAGAZINES

The Entomologists' Record for February contains 'Gall causing Trypetidæ,' by M. Niblett; 'New Generic Names for Microlepidoptera,' by T. B. Fletcher; numerous Collecting Notes and Supplement, 'The British Noctuæ and their varieties,' by H. J. Turner.

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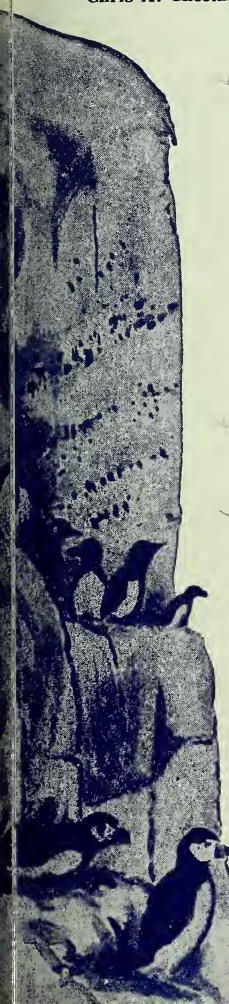
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EDITORIAL NOTE

With this issue of *The Naturalist* the dual numeration which has appeared on its covers since January 1898, the commencement of the 23rd Annual Volume, is discontinued.

The reasons for this will emerge from articles which will be published in our Journal for August and September. These are written by one of the oldest members of the Yorkshire Naturalists' Union and while expressing his own views, in which we fully concur, we trust their soundness will meet the approval of our readers.—EDS.

YORKSHIRE NATURALISTS' UNION

ENTOMOLOGICAL SECTION

THE Annual Field Meeting of the above section will be carried out in conjunction with the Union's Skipwith Excursion, to be held on Saturday, June 15th. Members will find that Riccall will be the most convenient starting place, and the party will leave after the arrival of the bus from York at 10-42 a.m. Those who go to Skipwith will meet the party on Skipwith Common, and members with cars should meet at Headquarters, Hare and Hounds, Skipwith, at 11 a.m.

12 Dudley Road,
Marsh, Huddersfield.

M. D. BARNES,
Hon. Sec.

THE FABRICIAN TYPES OF INSECTS IN
THE HUNTERIAN COLLECTION, VOLUME II.

COLEOPTERA

By ROBERT A. STAIG

31 plates in colour.

27s. 6d. net.

(Glasgow University Publication)

This volume continues Dr Staig's systematic description and illustration of Hunter's collection of insects, made about 160 years ago and then classified by Fabricius, which was part of Hunter's bequest to Glasgow. The first volume was published in 1931 and began the description of Coleoptera, which this volume continues.

CAMBRIDGE UNIVERSITY PRESS

DISTRIBUTION OF THE LARGER FUNGI IN RELATION TO RELATIVE ACIDITY OF THE SOIL¹

JOHN GRAINGER, PH.D., B.Sc.

FUNGI are easily the most prolific of all living organisms. Buller, in his famous *Researches on Fungi*, showed that one parent organism could produce extremely large numbers of spores. One fructification of the common mushroom was responsible for 1,800,000,000, and other species were mentioned with even larger spore outputs. The giant puff-ball, *Lycoperdon giganteum*, appears to hold the record with the almost incredible number of 7,000,000,000,000 spores. These tiny bodies are carried by air currents in the atmosphere and achieve a wide distribution. Fungus spores can be found in viable condition at altitudes over 20,000 ft. (10, 11), and can appear in such numbers that 224 spores may be caught on 3 sq. in. in 5 mins. (12, 13), or that 1,100 spores of one species may be delivered per sq. in. daily (1). Wheat rust spores can be transported seasonally over distances in the order of 400 miles (6) and may even traverse the Atlantic ocean. Numerous investigators (2, 3, 4, 5, 7, 8, 9, 14) show, in fact, that spores of fungi are the most numerous inhabitants of the atmosphere. These minute bodies fall to the earth, or are washed there by rain, and it becomes an increasing ecological necessity to consider what edaphic factors reduce the appearance of fungi to the normal frequency with which we are familiar in practice.

One potent factor, whose effects are already known in artificial culture, is that of relative acidity of the substrate. The need for a study of this question in the field was strongly indicated during the preparation of the *Catalogue of Yorkshire Fungi*, and Mr. Fowler Jones, with his characteristic generosity provided a large number of printed record cards which could be filled with data as to locality, date, and determination of species, and with the relative acidity (*pH*). That was in 1936, and during the last three years more than 750 records have been collected and tested with the valued help of Mrs. M. Grainger, Miss J. Grainger, and Mr. A. Broadbent. Tests for relative acidity were made throughout with soil indicator made by British Drug Houses, Ltd., and results are expressed in *pH* notation, where *pH* 7.0 represents neutrality. Values above this are alkaline, and acid below; *pH* 4.0 represents a very acid soil.

The data reveal a distinct optimum for each species, and Tables 1 to 3 effect a rough classification into groups whose optimum range is acid, neutral, or alkaline respectively. Two species with wide range are mentioned in Table 4, while Fig. 1

¹ The Chairman's address to the Mycological Committee of the Yorkshire Naturalists' Union, September 2nd, 1939.

TABLE 1. SPECIES WHICH FAVOUR ACID SOIL

	pH	Number of Tests
<i>Amanita rubescens</i>	4.7-5.7	13
<i>Amanitopsis fulva</i>	4.7-5.8	7
<i>Boletus chrysenteron</i>	4.7-5.8	5
<i>B. edulis</i>	4.5-6.0	10
<i>Cantharellus cibarius</i>	4.8-5.5	6
<i>Collybia maculata</i>	3.5-5.0	6
<i>C. platyphylla</i>	3.5-6.7	5
<i>Flammula carbonaria</i>	4.5-6.0	5
<i>Galera hypnorum</i>	4.0-5.7	7
<i>Laccaria laccata</i>	4.9-6.3	19
<i>Lactarius subdulcis</i>	4.0-5.8	11
<i>L. subumbonatus</i>	4.8-5.0	4
<i>Paxillus involutus</i>	4.0-5.8	20
<i>Phylacteria terrestris</i>	4.5-5.8	4
<i>Russula atropurpurea</i>	5.0-5.7	12
<i>R. cyanoxantha</i>	4.2-5.9	11
<i>R. emetica</i>	4.5-6.0	11
<i>R. ochroleuca</i>	4.0-5.8	15
<i>Scleroderma aurantium</i>	4.5-5.8	11
<i>Stropharia semiglobata</i>	4.0-7.3	44

TABLE 2. SPECIES WHICH FAVOUR NEUTRAL OR SLIGHTLY ACID SOIL

	pH	Number of Tests
<i>Bolbitius fragilis</i>	5.6-7.0	3
<i>Clavaria cinerea</i>	5.7-8.0	3
<i>Collybia butyracea</i>	5.5-7.0	4
<i>Coprinus plicatilis</i>	5.7-7.0	3
<i>Galera tenera</i>	6.6-7.3	3
<i>Hygrophorus coccineus</i>	5.5-7.4	5
<i>H. conicus</i>	6.0-7.0	6
<i>H. chlorophanus</i>	5.8-7.4	7
<i>Lachnea scutellata</i>	5.8-8.0	6
<i>Lycoperdon perlatum</i>	5.8-7.6	6
<i>Panaeolus phalaenarum</i>	5.8-7.5	12
<i>Psilocybe coprophila</i>	5.6-7.5	5

TABLE 3. SPECIES WHICH FAVOUR PREDOMINANTLY ALKALINE SOIL

	pH	Number of Tests
<i>Anellaria separata</i>	6.7-8.0	11
<i>Boletus granulatus</i>	7.4-8.0	3
<i>Clavaria cristata</i>	6.3-8.0	3
<i>Coprinus micaceus</i>	6.8-8.0	6
<i>C. comatus</i>	7.5-8.0	4
<i>Panaeolus campanulatus</i>	6.8-8.0	3

TABLE 4. SPECIES WHICH CAN TOLERATE A WIDE RANGE OF ACIDITY

	pH	Number of Tests
<i>Mycena galericulata</i>	4.5-7.5	6
<i>Phallus impudicus</i>	3.5-7.0	10

shows further detail for 12 species. *Stropharia semiglobata* has a wide range, but the quantitative information in Fig. 1 reveals a distinct maximum between pH 5.0 and 6.0. *Amanita rubescens*, *Russula atropurpurea*, and *Anellaria separata* have

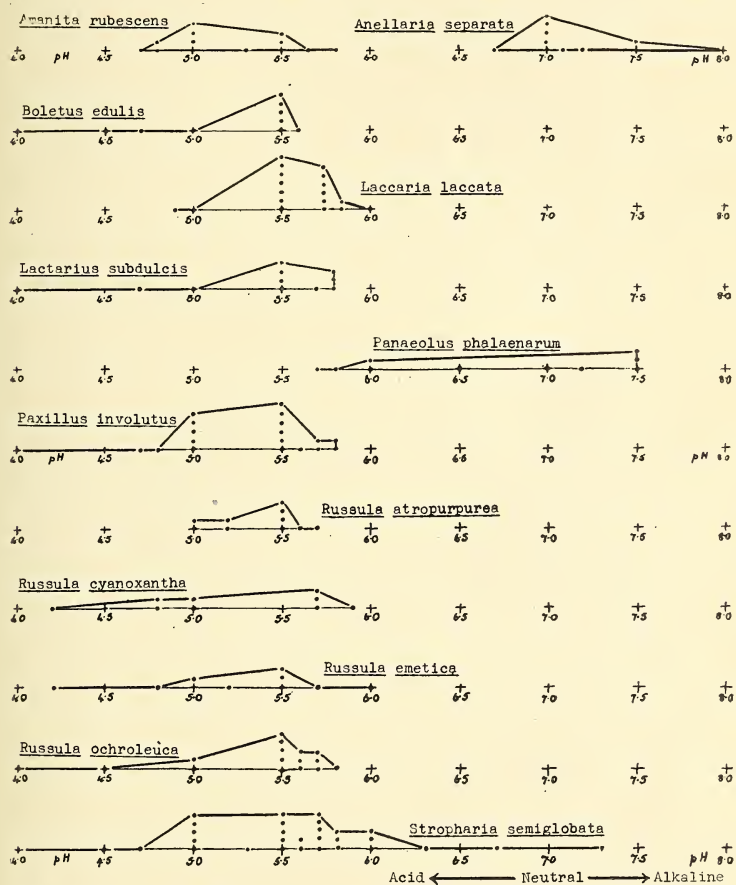


Fig. 1. Diagrams showing frequencies of soil acidity recorded for 12 species of the larger Agaricales. The round dots indicate the results of tests, each made in a separate locality.

rather a restricted range of relative acidity (pH). Estimations involving three or more tests from different localities have been made for 64 species to date, and 43 of these have not been found on a substrate above pH 7.0. The majority of species favour an acid medium, and the number of species which consistently favour alkaline soil is low (see Table 3). Most of the fungi have been collected from widely-varying localities in Yorkshire, though a few were obtained outside the county.

It is thus evident that the different optimal requirements for relative acidity provide a selective obstacle to the germination of many fungal spores brought by the atmosphere.

The effects of acidity appear to be even more sharply marked with coprophilous fungi. *Stropharia semiglobata*, though having a potentially wide taste in relative acidity upon soil, is usually more restricted upon dung. Cow manure upon which *S. semiglobata*, *S. stercoraria*, and *S. merdaria* grow is almost certainly more acid than pH 6.0, but if *Panæolus campanulatus* appears the manure is usually above pH 6. *Anellaria separata* is also a predominantly alkaline species, but appears most in spring and summer. Miss Grainger found *S. semiglobata* and *P. campanulatus* growing upon the same dung—an apparent contradiction to the above idea. Tests of acidity, however, revealed that the dung was not uniform, and each species was enjoying its particular optimum. So was scepticism changed to the strongest vindication. Similar tests were made during the recent fungus foray at Gilling West. The two species mentioned were found 15 in. apart on soil, but each favoured its appointed sphere of pH.

Lignicolous fungi exhibit a parallel feature. Some species feed upon living wood, others upon hard timber, others upon soft material, and still others upon wood which is rapidly becoming mould. Some fungi appear from the bark, but others fructify only upon the bare wood. It is not, perhaps, generally known that fungi which attack growing wood and fresh timber are growing upon an extremely acid medium of about pH 2.9 or even less. Many of the common polypores, as *Polyporus Betulinus* and *P. hispidus* grow under these conditions. The stages of rotting gradually raise the relative acidity until, in the final stages of decay, such species as *Mycena galopus* and *M. galericulata* might be found growing between pH 5.0 and 6.0 and pH 4.5 and 7.5 respectively.

Mr. Jones' record cards, mentioned above, also included spaces for the percentages of water and organic matter in the material upon which fungi were growing. Soil was weighed in the field for these determinations and was dried and incinerated later. No conclusion can yet be drawn about the effect of organic matter, but one or two trends as to the influence of water content are indicated. No fungal fructifications appear to be produced when the moisture content of the surface soil falls below 20 per cent. Several species of the genus *Russula* and *Paxillus involutus* do not appear to require high water contents; they grow commonly in leaf-mould containing between 20 and 40 per cent. of water. *Lachnea scutellata* and *Pluteus cervinus* appear to favour damp substrata having between 40 and 80 per cent. of water. This work is in its infancy, and much requires to be done, but some useful lines

of future investigation are opened by that which has already been performed. It is eminently a branch of study for the field mycologist, where observations suggest further work and lead to more detailed investigations.

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RECORD

COMMON SCOTER

ON Sunday, April 7th, about 11 a.m. an adult male Common Scoter was seen by Mr. Field, of the Leeds City Museum, and myself at Swillington Ing. It permitted a close approach, as it cruised slowly along within a few yards of the South Shore and making effortless dives, varying in duration between fifteen and thirty-one seconds. Display was noted but no call heard. It had gone by 6-30 p.m. The occurrence inland of Common Scoter between early September and the end of October, also the end of April to early June, is mentioned in the Handbook by Witherby. Nelson, in the *Birds of Yorkshire*, states that 'it has occurred on most of the large tarns, lakes and reservoirs, and many of the rivers, particularly of the West Riding.' There appears to be no specific record for Swillington previously noted.—A. G. PARSONS.

REVIEWS AND BOOK NOTICES

How to see Nature, by Frances Pitt, pp. vi+88, with 39 photographic illustrations and several diagrams. Batsford, 3/6. Miss Pitt always writes well, and this dainty book is well up to the usual high level. The first chapter—'Nature Walks'—is the plea of the enthusiastic naturalist for exploring the countryside on foot. The treasures of the wood, stream, and hedgerow are not found by the hurrying motorist, but by the leisured ambler, who may not cover

more than a mile or two in his half-day stroll. Miss Pitt knows by long first-hand experience what to look for and how to do it. Young people will find in this book the ideal introduction to a study of nature. The photographic illustrations are of the best of their kind and Mr. L. R. Brightwell's drawings are extremely helpful.

Bird Reserves, by **E. C. Arnold**, pp. xii + 216, with nine coloured plates from paintings by the author and twelve monochrome plates. Witherby, 15/-. Mr. Arnold has possessed himself, apparently at bargain prices, of several slices of land in Sussex with the idea of reserving them for purposes of bird protection. His book convinces one that he is succeeding in his object. It is to be hoped that all nature lovers will seize an opportunity of reading of Mr. Arnold's adventures and observations, and in particular we commend his book to all ornithologists with two or three hundred pounds to spare for the purchase of a few acres of so-called waste land. It is not a very expensive business to wire off a fairly large marsh, and when it is realised how many interesting species of birds nest round about reedy meres, the value of the preservation of such habitats becomes apparent. Mr. Arnold writes forcefully and is interesting all the time. The illustrations are, on the whole, a valuable and appropriate accompaniment to the text. The plate of the Marsh Warbler's nest is unintelligible, but this may be due to loss of detail in reproduction.

British Water Beetles, by **Frank Balfour-Browne**, Vol. I, Ray Society, 1940, price 25/-. This is the first of two volumes by the same author on the British Aquatic Coleoptera, and reaches *Laccornis oblongus* (No. 423 of Hudson Beare's Catalogue of 1930). Professor Balfour-Browne has long been known as our foremost authority on British water beetles, and his work has done much to clarify our knowledge of these insects. Part I deals with their general structure and habits, larval morphology and larval types (including a key to the larvæ), and distribution. This section will probably be found the most interesting by the general student, since it includes discussions on their origin, respiration, locomotion, life-cycle, elytral reticulation, etc. All this is admirably done, and is so much the more valuable as a large proportion of it is original work. There is a good chapter on methods of collecting and preserving; this does not claim to be exhaustive, and does not, for example, include a method of catching the beetles which cling to the stones in rapid streams. In Part II we have a detailed and very valuable account of the water beetles, species by species. The author states that the 'book is not a systematic treatise on the British water-beetles,' but there are most valuable keys with diagrams which should enable the student to name his captives with fair ease; for example, there are outlines of the ædeagi of *Halipplus* species and sketches of the antennæ, etc., of closely related species, all of which are invaluable. The greater part of the book is concerned with the work on life histories and geographical distribution which the author has made peculiarly his own subject. There are many maps showing the distribution of individual species; and here discrimination is made between records made or checked by the author, and those collected from published records. There can be few that have escaped the author's eye, and this forms a most valuable contribution to our knowledge. There are five plates of various structures and a somewhat brief bibliography, but there are so many references throughout the text that a longer one is probably unnecessary. The format of the work, as always with Ray Society publications, is excellent, and the author and the publishers alike are to be congratulated on producing such an important work under war-time conditions. It is safe to say that it will long be a necessity for every serious student of these interesting insects.—G. B. WALSH.

THE BROWN RAT

T. HYDE-PARKER

THE present National Economy Campaign seems likely to affect, directly or indirectly, several species of our fauna, and there are certainly some which one would see reduced in numbers without poignant regret. As a gardener in a rural district, I might include the rabbit and mole among those whose diminution would not be an unmixed evil. But there is one mammal that, apart from his actual numbers, is not only harmful but actively objectionable in every way—that enemy alien, the Brown Rat.

Though we are all aware, in a vague way, that this obnoxious rodent is not indigenous, few perhaps realise how comparatively recent was his first appearance here. Old records seldom make any mention of the rat as a pest, from which one must conclude that the so-called Black Rat was not nearly so undesirable. An act of Queen Elizabeth for the 'dystrectyon of noyful fowells and vermyn,' which provides for payments for the heads of various birds and beasts, does not seem to include the rat; nor, over a century later, do the churchwardens' accounts for the village of Hope in Derbyshire make any mention of that rodent, though including disbursements for 'fox cubbs,' 'Boson (badger) heads,' as well as the heads of many 'Urchins,' etc.

The Common, or Brown Rat, then (for simplicity we will use the popular name, and let scientists decide whether *Mus*, *Rattus* or *Epimys*) made its first appearance in this country about the time of the accession of the Royal House of Hanover, being hence known as the Hanoverian rat—and detested by Waterton accordingly! The actual period, to quote Prof. Boyd Dawkins, was a little prior to 1730. Its reputed place of origin was Central Asia, whence it appears to have commenced migrating somewhere towards the end of the sixteenth century. Strangely enough, when, early in its career of conquest, it was christened the Norway Rat, it was not even known in that country. Once arrived on our hospitable shores, it rapidly spread, not only all over the mainland, but even to the remotest isles. Not content with that, and always following man—doubtless connecting his presence with food—it utilised British shipping to spread over three continents, thus proving that it is not only sinking ships that rats leave!

A fair average size for a Brown Rat is 16 in. overall, the tail accounting for about 7 in. of this. One which I shot some time back measured nearly 20 in., and was the largest I have ever seen. The record weight for England (as given by *The Field*) is 2 lb. 12 oz., but this must indeed have been an outsize specimen. The female may have four litters, of

anything from six to a dozen, in a single year, and they begin to breed at six months old. Such rapid increase, if unchecked, obviously leads to over-population, thus accounting, in part at least, for those mass migrations which occasionally take place, and of which there was an instance some years ago at Scarborough.

As regards general character, it is almost sad to reflect that the animal has not a single apologist. Indeed, all the forces of obloquy have been ranged against it. With a casual mention of the fact that the rat is held responsible for the dissemination of bubonic plague, let it suffice to quote Sir Harry Johnston who, in his *British Mammals*, opens the article on the Brown Rat with the statement : ' This creature is almost an unmitigated nuisance, and is one of the few mammals that it would be virtuous to completely extinguish.' The only feature that can be considered even remotely in its favour is that it generally keeps its own person clean, when living amidst filth.

The Brown Rat is, for its size, a singularly fierce and fearless animal. Not only did it practically (though not entirely) exterminate the earlier and rather smaller ' Black ' species, but, when cornered, it will face almost anything—even a cat, as I can myself testify. It is also a cannibal, killing and devouring without mercy the young, infirm and trapped of its own species. It is fond of the vicinity of water, and here it ousts the harmless Water Rat. The latter, which, of course, is not a rat at all, and is moreover a strict vegetarian, is thus not only turned out of its quarters, but actually blamed for the misdeeds of its evictor. Another waterside resident that suffers is the frog. At spawning time I have sometimes seen numbers of disembowelled victims round the edge of a farm pond ; and I understand that toads are similarly treated.

For absolute fearlessness, however, this is nothing compared with attacks on human beings. Not merely have sleeping sailors had their toes nibbled by famished rats, but they have been known to tackle the men who clean and supervise sewers, and who, in some places, are compelled to go down in pairs for this very reason. Anyone who has visited Mont St. Michel will certainly recall that gruesome waxwork representing a prisoner in one of the dungeons '*qui mournt rongé par les rats.*' I have often thought that an animal of similar temperament, and the size of, say, a mastiff would be the world's most dreaded beast.

In the poultry-yard, where good shelter is to be found under the houses, they not only steal the corn and kill chickens, but have also a weakness for eggs which they will either suck on the spot or trundle skilfully away. Like most

carrion feeders, rats are thirsty creatures, and, in snowy weather, I sometimes note well-worn trackways leading from a nearby poultry farm to the adjoining streamlet.

The game preserver, also, has little cause to love the rat, who devours both expensive food and young pheasants galore ; and yet keepers are often so blind to their masters' real interests as to devote much of their energy to killing off the rat's worst enemies. When one notices kestrels, owls and weasels among the pilloried mummies, one is inclined to agree with Charles St. John—an all-round sportsman, by the way, and no mere sentimentalist—when he refers to the impossibility of 'persuading so opinionated and conceited a personage (as most keepers are).'

It is, of course, superfluous to comment on the damage done by rats in corn stacks—especially wheat and oats, for barley does not seem quite so attractive, possibly owing to the harsh and bristly awns. In stacks, too, modern methods of gassing, or spraying a poisonous volatilising powder, are rather ineffective, as it is impossible to restrict the fumes to the actual runs. In the open fields, needless to say, growing crops do not escape.

In the garden, rats can do much damage, especially, so far as my own experience goes, among peas and potatoes. A year or two back I began to notice that something was attacking my peas, either at night or in the early morning. At first I suspected Wood Pigeons, but soon decided it was rats, whereupon I adopted the only really sure remedy, and the trouble ceased. It must always be remembered in this connection that the rat is a skilful climber. Birds with eggs or young in shrubs or hedges have cause to know this ; and the ivy or creepers on a house wall may be utilised as ladders. I remember once visiting a bedridden acquaintance in her first-floor bedroom where, to enliven the weary hours, she used to attract birds by having food placed on the outside window-sill. As I sat there, a rat suddenly appeared and helped himself ; and I had some difficulty in screening my interest from the lady in question who might scarcely have appreciated a rat in such close proximity.

Within the house itself, apart from their undesirable presence—alive or dead !—rats can be very harmful, not only by consuming and defiling our food, but in scratching and gnawing holes all over the place ; for they are capable of boring through timber, mortar and even lead piping. No wonder the *Rodentia* are provided with incisors which keep on growing, and keep pace, more or less, with the rate at which the apex is worn away. Rats, too, are wonderfully intelligent in gaining access to anything they fancy. Whether the old tale of our childish days, of the rat who dangled his tail into

a bottle of oil, afterwards withdrawing and licking it all over, had any foundation in fact or no, they seem equal to anything.

All things considered, it is evident that the damage caused by this, 'the most powerful enemy that civilised man has to contend with,' is a very serious matter. Over thirty years ago, the loss to this country was estimated at £15,000,000 a year, and one may fairly assume it to be still more to-day. Fortunately the gravity of the situation is at last being realised, even by farmers, many of whom, though among the greatest losers, have been singularly apathetic in the past. More up-to-date methods are being urged; and, as a result of an offer by a Lincolnshire Rural Council of 'tail-money' at twopence a head—which sounds rather Irish!—nearly 5,000 have actually been handed in.

Well, much more might be said on so fruitful a topic, but, to quote Swift, 'there seems to be no part of knowledge in fewer hands than that of discerning when to have done.' The foregoing may help to re-awaken interest in a rather important matter on which endless literature is already available.

FIELD NOTE

Lapland Bunting.—During the very severe weather of January and February a small flock of Lapland Buntings was observed near Spennithorne, very often accompanied by Chaffinches. **Snow Bunting.**—During the same period Snow Bunting were observed much lower in the dales than usual. **Pied Blackbirds.**—On April 6th a beautiful male bird spent a few minutes in my garden. Another pied bird appears to have taken up residence near Catterick (C. M. Rob). **Albino Mole.**—A very fine example of a White Mole was caught at Catton Hall, near Thirsk, on March 7th. The specimen, which was sent on to me by Mrs. Rob, was considerably larger than the average mole.—J. P. U.

NEWS FROM THE MAGAZINES

The Entomologist's Monthly Magazine for April contains 'A Note on the Structure of the Eye in *Aepus* (Col. Carabidæ),' by E. H. Britton; 'New Records of Insects in Grain Stores,' by R. Howe; 'Further Notes on the Genus *Popilius* Kaup. (Col. Passalidæ),' by J. R. Dibb; 'Four Species of Coleoptera new to the British List,' by A. A. Allen (*Cryptusa capitalis* Muls., North Kent and Salop, *Atheta puncticollis* G. Benick, Aviemore, *A. benicki* Allen, Dorset, and *Euplectus carolae* Allen, Windsor Forest); 'Further Observations on the Psyllidæ (Hemipt.) of the Inner and Outer Hebrides,' by J. W. H. Harrison and G. H. Harrison; 'Further Sawflies of the Genus *Pontania* Costa (Hym. Symphyta) in Britain,' by R. B. Benson (*P. nigrolineata* Cam., Scotland and Cheshire, *P. bridgmanni* Cam., Norfolk, Beds., Bucks., and Surrey, *P. harrisoni* Benson, Scotland and Middleton-in-Teesdale, Yorks.); and several shorter notes.

RHAGIUM BIFASCIATUM Fabr., *A. INFASCIATUM* Pic

An Aberration new to Great Britain

RAYMOND R. U. KAUFMANN

THE history of the nomenclature of *Rhagium bifasciatum* Fabr. and its variants is rather involved and requires careful study in order to clarify the basis upon which the present determination is made.

The World Catalogue gives *bifasciatum* Fabr., distributed over Central and Southern Europe, and the following synonyms: *anglicus* Gmel., from England; *elegans* Herbst., a German record; *maculatus* Laich., from the Tyrol; and *parisinus* Fourc., from France. The varieties mentioned are the v. *bicolor* Oliv., from France; v. *Ecoffeti* Muls., an Alpine specimen; v. *ornatus* Fabr., from Northern France; and v. *infasciatum* Muls., also from France. In the first edition of the European Catalogue, *bicolor* and *ornatum* become synonymic values of the type, and *Ecoffeti* and *unifasciatum* are degraded to sub-varieties. There is, however, a wide revision of these determinations in the second edition of this Catalogue, and in 1906 *ornatum* is the sole remaining synonym, *bicolor* being once more granted full varietal rank, with which *Ecoffeti* and *Gravei* Huebenthal now become synonymic. The *a. unifasciatum* of the earlier issue still holds its place, and the following additional aberrations are given: *fasciatum* Pic, *infasciatum* Pic, and *lituratum* Fug.

Kuhnt, in his work on the German fauna, makes *bicolor* an aberration while recognising the remaining four abs. of the 1906 Catalogue. Reitter, in his own earlier work on the German Coleoptera, keeps the *a. unifasciatum*, for which he quotes *lituratum* as a synonym. The *a. fasciatum* is also retained, but v. *Ecoffeti*, v. *Gravei*, and the specific synonym, *ornatum*, become merely synonymous with the former. Finally, *a. infasciatum* remains unchanged.

Post-war monographs on the sub-order reveal these details. Planet, in his *Longicornes de France*, makes no mention of the French, Pyrenean and Alpine aberrations described by Olivier, Pic and Fabricius, save that the v. *Ecoffeti* becomes synonymous with *unifasciatum* Muls. This is rather curious in view of the fact that some of these colour variants were determined from French sources. It may be, however, that he was unable to see authentic examples, and, in any case, his monograph was confined to species found on French soil. He describes and figures an unnamed variety (which is in fact the *a. unifasciatum* Muls.) and the v. *Ecoffeti* Muls., for which he gives *bicolor* Oliv. as a synonym.

From this entangled nomenclature and periodic revision it

would seem that Mulsant based his Swiss and French determinations on specimens which were in reality identical. This is as curious a misunderstanding as the later authors' omissions in respect of any references to Pic's abs. *fasciatum* and *infasciatum*. However, the *a. fasciatum* is indeed nothing but the v. *Ecoffeti* (= *Gravei*) as suggested by Reitter. Comparison of the descriptions of both Reitter's and the French authors' specimens and figures makes it quite certain that this is the case. The v. *Ecoffeti* Muls., therefore, takes priority over Pic's *a. fasciatum*. Since this question is no longer in doubt, the problem of Pic's *a. infasciatum* remains to be solved. Picard makes no mention of it either in his letterpress or in his bibliography, yet the name must stand by reason of its inclusion and reference in the 1906 Catalogue (Pic, *Mat. pour servir à l'étude des Longicornes*, II, 3) and the German authorities' summaries of its description. This is the aberration which occurs in this country. A summarised analysis of the foregoing remarks shows :

Rhagium bifasciatum Fabr. = *anglicus* Gmel. = *elegans* Herbst.
= *maculatus* Laich. = *parisinus* Fourc. (*nec*
bicolor Oliv.).

v. *Ecoffeti* Muls. = *bicolor* Oliv. = *Gravei* Huebenthal
= *fasciatum* Pic = *ornatum* Fabr.

a. unifasciatum Muls. = *a. lituratum* Fueg.

a. infasciatum Pic.

The variety and aberrations are distinguished from the type by this key :

1. v. *Ecoffeti* Muls. The elytral fasciæ are obliterated centrally and at the sides by a reddish-yellow colour spreading to the elytral shoulders. The elytral apex below the limit of the normal posterior fasciæ and a sub-quadrate portion round the scutellum are not affected.
2. (3) *a. unifasciatum* Muls. The reddish-yellow colour spreads from the elytral apex over the position normally occupied by the posterior fasciæ, but the anterior bands remain distinct.
3. (2) *a. infasciatum* Pic. The reddish-yellow colour spreads from the elytral apex over both sets of fasciæ, which are completely obliterated. The elytra are thus sharply divided into a darker basal third and a much brighter apical two-thirds.

The type form, as stated, is distributed over Central and Southern Europe ; v. *Ecoffeti* has been described from the Alps, the Vosges, the Saone-et-Loire district (Montjeu) and the Eastern Pyrenees ; *a. unifasciatum* hails from the Basses

Alpes and Switzerland, and *a. infasciatum* has been hitherto described by Pic from Cantalabrian sources.

There are British references to the existence of colour aberrations, but the accounts are vague. Stephens seems to be the first to note that the elytral markings varied considerably. Donisthorpe, in his survey of the Windsor Forest fauna and one of Stephen's favourite collecting grounds, only records the type form. Fowler, too, refers to 'certain not uncommon varieties' with much enlarged and confluent fasciæ (this would be the v. *Ecoffeti*). Joy also states that the markings vary considerably, but that they are rarely absent—a rather significant remark, for it suggests the existence in Great Britain of both var. and abs.

Two examples of *a. infasciatum* Pic in coll. *meâ* were taken with many of the type form from holes in a fallen pine tree at Pannal Ash, Harrogate, Yorks., on 19/5/35.

In conclusion, it is necessary to note that G. B. Walsh records the *a. bicolor* Oliv. (v. *Ecoffeti* Muls.) from Pickering, Yorks. (14/6/38).

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Elementary Microtechnique, by H. Alan Peacock, pp. viii+330. Arnold, 8/6. We are very pleased to see a second edition of this fine work, which first appeared five years ago. The author has utilised the occasion to recast some of the text, and has added some matter. The changes improve what was already an extremely valuable guide to all kinds of operations associated with the preparation of material for examination under the microscope. We believe that the first edition is now very well known among teachers of biology, amateur microscopists, and others. So far as we know, it is the only low-priced book in the English language which gives a comprehensive survey of practical microscopy.

THE WINTER OF OUR DISCONTENT

T. HYDE-PARKER

AN all-wise Government now permits it to be generally known that this year we had an unusually severe January ; and, in view of the fact that a broadcast appeal was made on behalf of our birds, it is interesting to recall a few countryside impressions during that trying time.

A green Christmas may or may not mean a full churchyard, but there can be no manner of doubt that a long spell of cold weather, especially if accompanied by snow, spells hardship untold to most of our wild things, and to no section more, perhaps, than to the smaller resident birds, whose normal range of flight is limited and whose natural food supply practically ceases. For them it quickly becomes a stern struggle for existence—the survival of the fittest—and woe betide the weakling. ‘The old lion perisheth for lack of prey,’ and in this fight against starvation it is indeed a case of *vae victis*. Not only does the weaker go to the wall, but he is pushed there by his stronger rivals who at times, grown desperate, hardly wait till death comes to his relief before commencing on his wasted remains.

As regards those birds that habitually haunt our gardens, the supplying of food has often been somewhat of a problem, for the crumbs and scraps from an ordinary small household do not go very far. However, we supplemented these as much as possible, and certainly the table spread in the wilderness seemed to give satisfaction. Hordes of Starlings, not normally honouring our premises, did undoubtedly take more than their fair share, though at least they do not scare away the other and smaller birds. The great trouble has been Gulls—Black-headed and Common, in varying proportions. On one small part of the drive which I managed to keep clear of snow, I once counted sixteen; and not only will one Gull quickly gobble up what would keep a dozen of our own pensioners for a day, but no small bird dare draw near when they are feeding. Robbers and bullies by nature, for two pins they’d be murderers too ! It is well, if only for this reason, when preparing food, to ‘grind exceeding small,’ and so give the small chap a chance.

Incidentally, I may say it is unwise to strew food on the ground late in the evening, as any left over may attract vermin—also doubtless hard put to it, but scarcely desirable about the house.

Perhaps the luckiest of our visitors at such times of stress are the Tits—mostly Blue and Great—for they are easiest to keep supplied. A hopper full of small nuts, or a cocoanut—of which, by the way, they obviously prefer the former—provide them with constant food, besides keeping them occupied. Our Robin soon learned that crumbs from the rich man’s table might be looked for underneath, and after a time he even ventured to

alight on the swaying hopper, but unfortunately lost his balance every time he tried to peck ! More successful were the Starlings with sundry bones and pieces of fat suspended from branches, for they quickly managed to hang on and help themselves. I was most struck, however, by a certain Rook who alighted one day and gravely inspected a small bone dangling a foot or more below. He then proceeded to pull it up hand over hand, so to speak, placed one foot on it, removed the encircling string, and flew off with his trophy. All this time I had been too interested in the proceedings to raise any protest !

Thus one keeps them going through the brief winter day as best one can. With the coming of dusk—well, one can but hope for the best, though I often wonder where the poor things have found shelter,

When at Midnight sweep
Snow-muffled winds, and all is dark,

and note with regret, from time to time, that some little familiar form is missing at morning roll-call.

Many birds, of course, while not coming to our very doors, were only too thankful for what they could find in stack- and fold-yards, and, incidentally, I heard more than one complaint from local poultry farmers ! But, despite these various aids, there has been sad mortality—more than one ever sees or than many of us realise, for the few little corpses noticed represent but a trifling proportion of actual casualties among our smaller birds.

So much for that comparatively small section of the avian populace to which we can afford help. For the wilder birds, hardy as many of them are, it must be an equally anxious time. The unusually large flocks of Golden Plover, whose advent in this neighbourhood would seem to have forecast the hard spell, moved on with the first serious snowfall, and later even our numerous Lapwings all disappeared. Fortunately that very drifting which repeatedly blocked all the roads around, swept stretches of land almost bare, and here, especially in turnip fields, vast numbers of Wood Pigeons, flocks of Rooks and Jackdaws, with Fieldfares and Larks, and an odd covey of Partridges, apparently managed to scratch and pick some sort of a living. But the Snipe, which descended upon us when the weather first became severe, had eventually to find fresh quarters as drains and ponds quickly became frozen over and snow-covered.

It was noticeable, as the month of January wore on, how much nearer one could approach fowl normally wild and alert. Even Grey Geese seemed less wary than usual ; occasional feeding flocks might have been fairly easily circumvented, and a man I know nearly caught an odd one as it rested, weary or torpid, by the sea-line on the beach. One gloomy afternoon

I actually put up a Tufted Duck in our village street where it was squatting disconsolately in the gutter.

Ah well! Bird life has, in the past, survived winters equally severe, and one need not fear that there will necessarily be any lasting ill-effect, though it may well be that, even with the help of immigrants, certain species will show some decrease in numbers for a season or two.

ORIGIN OF ROMAN ROOFING TILES

DURING the excavations on the site of the Roman Villa at Harpham some years ago (see *Hull Museum Publication*, No. 23), several roofing tiles were obtained which I suggested were similar to the Elland Flagstones, and that the clerk of the works at Harpham at the time had gone to the West Riding for this material. The same individual had made tessellated pavements and these were remarkable from the fact that besides tesserae of sandstone, they contained a large quantity of chalk tesserae, which were conspicuous for their hardness, compared with the local chalk. On removing the pavement, however, it was apparent that this individual had gone to the beach at Bridlington or thereabouts where he had selected chalk pebbles representing the cores of larger pieces, and in this way he had taken advantage of nature's natural selection. While the tops of the tesserae were square, underneath they were rounded and many were bored with *Cliona*, evidence of their beach origin.

I submitted samples of the sandstone tiles both from Harpham and Rudstone to the late Professor A. Gilligan, who had microscope slides made from these samples. Dr. H. C. Versey now sends the following report on the slides :

Roofing Stone, Harpham.—A fine grained micaceous sandstone. Both muscovite and biotite are present and show arrangement in bands as in a flagstone. The biotite shows various degrees of alteration to chlorite and iron oxide dust. There are occasional pieces of carbonaceous material.

Roofing Stone, Rudstone.—Shows many of the features of the above, but is rather coarser and more felspathic. These felspars include some grains of microcline.

Tesserae, Harpham.—Fine grained sandstone closely resembling the roofing stone from Harpham.

All these rocks invite comparison with the flaggy sandstone near the base of the Coal Measures. These flagstones—the Elland Flags—have their typical development near Halifax and show variation from very fine-grained highly micaceous rocks to coarser felspathic strata. The roofing stones and tesserae described above are intermediate in character, but can be closely paralleled with thin sections of Elland Flags from Southowram and elsewhere, preserved in the Gilligan Collection at the University of Leeds.—T.S.

XYLARIA

T. PETCH

THE following notes on *Xylaria* were read on my behalf at the Fungus Foray at Hovingham in September, 1938. It had been hoped to give a summary of the genus, as was done for *Hypoxylon* the previous year (see *Naturalist*, April, 1938, 115-118), but the list is too uncertain, chiefly because the available specimens are insufficient. It is possible, however, to make some corrections, and these notes may serve to prevent waste of time in identification.

There are fifteen alleged species in the British list, viz. :

X. hypoxylon, *polymorpha*, *corniformis*, *longipes*, *bulbosa*.

X. digitata, *tortuosa*, *scotica*.

X. pedunculata, *vaporaria*, *Tulasnei*.

X. carpophila, *filiformis*, *hippotrichoides*, *oxyacanthae*.

X. hypoxylon and *X. polymorpha* are well-known species, and numerous figures are available. The former is the common candle snuff fungus, and has ascospores, $12-14 \times 5-6\mu$; the latter has ascospores, $20-32 \times 5-9\mu$. What is the colour of *X. polymorpha* when young? Winter says it is earthy brown; Cooke says dirty white.

X. corniformis was recorded by Berkeley from Speke Hall, Lancs. Plowright gathered specimens in Norfolk which he at first assigned to *X. corniformis*, but subsequently published as *X. longipes*. *X. corniformis* was recorded for Mulgrave Woods at the Fungus Foray of 1900, but at the Fungus Foray at Mulgrave in 1930 one of our American visitors identified a specimen as *X. longipes*. The latter has also been found at Berry Pomeroy, Devon. I have examined all the available British collections of *X. corniformis* and *X. longipes*, and there is no doubt that they are all the same species, which for the present must be assigned to *X. longipes*. Whether the continental *X. corniformis* is different from *X. longipes* is uncertain. The former is said to have ascospores, $8-9 \times 5\mu$, and the latter, $12-16 \times 5-7\mu$, but the variation in size of the ascospores of a *Xylaria* is usually large. *X. longipes* is about 8 cm. high, with a well-defined stalk, thickened at the base, and a cylindrical head. It has the habit of growing in a cluster from the lower side of a fallen branch and curving upwards. In the immature state it should be pale yellow.

X. bulbosa is a very rare species which grows among pine needles and has been found once in this country, by Broome at Bath. It has a tuberous base, about 2 cm. thick, and a stout stem which divides at the apex. Its ascospores are given as $12 \times 4\mu$, so it comes near *X. hypoxylon* in that respect, and it may be a form of that species.

X. digitata was apparently common fifty years ago, but it appears to be rare now. It seemed to have a preference for worked timber, and was said to occur frequently at the base of gate posts. Now that gate posts are treated with a preservative, or made of concrete, it does not get so much chance. It owes its name to the fact that several clubs usually arise from a common sclerotoid base. It may be passed over as *X. hypoxylon*, but it is a different shape and has larger spores ($18-20 \times 5-6\mu$). It is white when immature.

X. scotica was first brought to notice by being exhibited at a fungus show at Perth. Specimens were sent to Cooke, who gave it its name. There is an abundance of specimens of that collection in the Kew Herbarium, but it has never been recorded again. The larger specimens are very striking. They have a long stalk which divides into two branches, and these divide again at the apex into clusters of clubs. But on examining the specimens it is found that the soil mark is just below the clubs. The stalk was underground and might be regarded as a rhizomorph. It was said to have grown 'on the ground in wood, Meiklour Woods,' but from correspondence at Kew it would appear that that should have been, on wood in the ground, actually in a flower bed. Cooke said that the spores were $5-6 \times 3\mu$, and he figured those spores on the herbarium sheet. Really, the specimens are quite immature, the asci just beginning to develop, and the 'spores' figured by Cooke are the cells at the base of the perithecium from which the asci develop. I have no doubt that *X. scotica* is immature *X. digitata*.

Sowerby was given a distorted branched specimen of a *Xylaria* about 140 years ago which he labelled *Sphaeria tortuosa*, but did not publish. Cooke found the specimen in the Kew Herbarium and described it as *X. tortuosa*. It grew in a greenhouse on the ground, but in all probability from buried wood, and it is an abnormality of *X. digitata*.

The next three species grow on manure or manured ground. *X. pedunculata* was originally described from British specimens in 1785, but it is apparently rare. I have specimens from Missouri, which grew in a ploughed field. It is possible that it was carried into the field with manure, as it grows from a sclerotium. It has a long thin stalk, and a globose or conical head. Its ascospores are remarkably large, $40-57 \times 20-27\mu$, and are black with a thick, hyaline, mucous coat.

A sclerotium was found in a mushroom bed in Cornwall and was sent to Currey, who planted it in damp sand, covered it with a bell glass, and kept it moist in a warm room in a window facing south. It soon produced the clubs of a *Xylaria*, which matured in three months. Berkeley described it as a

new species, *X. vaporaria*, but there is no doubt that it is *X. pedunculata*.

X. Tulasnei grows on rabbit dung. It is similar to *X. pedunculata*, but is very small, with similar spores only half the size. Berkeley and Tulasne considered it a small form of *X. pedunculata*. Plowright figured it in *Trans. British Mycol. Soc.*, growing on a rabbit pellet on the surface of the ground, and also from a buried pellet. His figure of the latter resembles *X. pedunculata*, but he did not record any difference in the size of the spores in the two forms. I have not found a sclerotium in a rabbit pellet which bears *X. Tulasnei*, but further specimens are required to decide the point. Recently, owing to the spread of mushroom cultivation, these *Xylarias* have come into the news as infesting mushroom beds, and I have been informed that *X. Tulasnei* has been developed from small worm-like sclerotia found in such beds. In that case it would perhaps be preferable to regard *X. Tulasnei* as a small form of *X. pedunculata*.

The final group includes three species which produce long black cords, or rhizomorphs. *X. carpophila* is common on Beech mast, but is seldom found in fruit. It was collected in fruit by Mrs. Grainger at Hovingham in September, 1938, the clubs developing on the inner side of a Beech cupule, not on the rhizomorph. The ascospores measured $11-13 \times 4.5-6\mu$. Similarly, *X. filiformis* occurs among dead leaves, but is usually sterile. If one finds coarse black strands springing from Beech mast one calls it *X. carpophila*, while if one finds thin black strands among dead leaves one calls it *X. filiformis*. But in the same gathering on Beech mast I have measured strands varying from 0.75 to 0.15 mm. in diameter at the base. *X. filiformis* was described as pink at the apex, but *X. carpophila* can also be pink. It is probable that these two are the same species, but until further mature specimens are available, the question cannot be decided.

X. hippotrichoides looks like horse-hair. It was first found in this country on a rotting bag of sawdust in a cellar at Wisbech. Then it was found on rotting matting in a damp pew at Cobham Church, Kent. Later, Berkeley found it on old matting in the church at Apethorpe, and kept it in a cellar for six months until it developed perithecia. It is probably not of much use looking for it on matting in churches nowadays, as the matting on which it grew was rush matting. However, Masee recorded it on coconut fibre at Scarborough. It was formerly referred to the genus *Thamnomycetes*, and it is included under that name in the *Fungus Flora of Yorkshire*, but *Thamnomycetes* has a different structure, and this species is a *Xylaria*. It may be noted that Sowerby did not call it

hippotrichoides, like horse hair, but *hypotrichoides*, somewhat hair-like.

X. oxyacanthae has been collected recently in Yorkshire, the first time in Britain, by Mr. W. G. Bramley. It grows on Hawthorn fruits, usually buried in the soil. It is uncertain whether it should be classed with *X. carpophila* or with *X. hypoxylon*. The spores of Mr. Bramley's specimens are $12-16 \times 4.5-6\mu$, as against $10 \times 4\mu$ given in the text-books.

Thus our fifteen species reduce to eleven, with a prospect of further reduction when more specimens have been collected.

PYROPTERUS AFFINIS AND ITS DISTRIBUTION

W. J. FORDHAM, M.R.C.S., L.R.C.P., D.P.H.

I AM indebted to Mr. Bayford for pointing out to me a bad mistake I made in giving the distribution of *Pyropterus affinis* in the report on Yorkshire Coleoptera in 1939. There I state that the only British localities are Sherwood Forest and Wheatley Wood. This is a grave error. *P. affinis* was taken in 1866 at Killarney by J. Ray Hardy and rediscovered there in July, 1898, by Mr. Hardy and Dr. Chaster. In 1867 it was discovered in Sherwood Forest by the Rev. A. Matthews, and later taken by others. In 1890 Mr. Bayford reared it from larvæ taken in Wheatley Wood, and H. Vincent Corbett swept one here in 1903. In 1892 it was captured by Mr. G. C. Champion at Aviemore and subsequently by Professor Sir T. Hudson Beare at Nethy Bridge. With the Wentbridge record there are thus four English records, two Scottish, and one Irish. With further reference to the report it should be noted that Middleton (Leeds) and Armley are in V.C. 63 and Hook Moor in V.C. 64 and not as stated.

The Transactions of the Society for British Entomology, Vol. 7, Part 1, consists of a single paper on the 'Dytiscidæ and Haliplidæ (Col.) in the Lake District,' by T. T. Macan. Its contents are: Definition of the Lake District, Source of Records, Description of Habitats, Records of Coleoptera, Notes on Ecology and References. The aquatic habitats are divided into three main types, pools, tarns, and lakes. Pools are divided into high pools, low pools, and quarry pools. Tarns are larger and deeper than pools, and the water is held up by a dam. Lakes have a yet greater surface area and depth. The list of aquatic coleoptera is a good one. *Platambus maculatus* and *Deronectes depressus* have the highest percentage of occurrences in lakes. Except for five species beetles are in lakes only found in well developed reed beds, or creeks where *Myriophyllum* is found near the surface. In the tarns beetles are mainly found where there are dense beds of submerged plants. Of the low pools only fifteen out of fifty contained beetles. It is difficult to generalise about the distribution of water beetles for none appear to be confined within a narrow range of habitat requirements. With few exceptions they are only found where there is thick cover. The greater number of individuals, though not of species, is found in pools.

The Entomologist's Record for February contains 'Gall causing Trypetidæ,' by Mr. Niblett; 'New Generic Names for Microlepidoptera,' by T. B. Fletcher; Numerous Collecting Notes; and Supplement 'The British Noctuæ and their Varieties' by H. J. Turner.

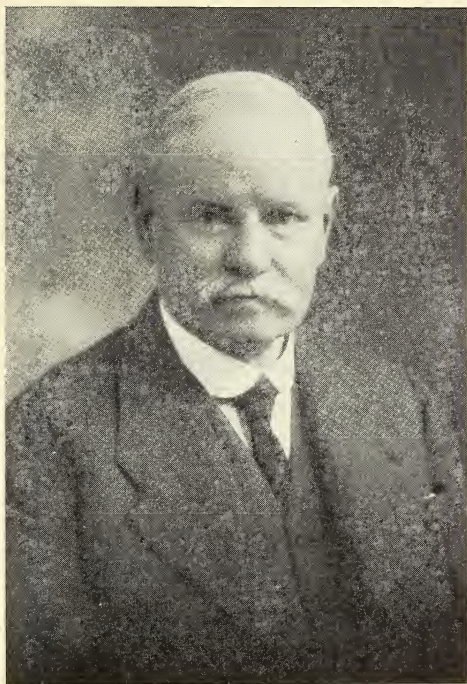
The Naturalist

In Memoriam

DR. T. W. WOODHEAD

AN APPRECIATION

HARDLY any figure of recent years has been more representative of the Yorkshire Naturalists' Union than Dr. T. W. Woodhead. Not only had he been for long a member of Executive, a prominent member at meetings, for many years joint Editor



of *The Naturalist* (1903-1932) and formerly President (1922), but his whole career was associated with Yorkshire and was built up from the elements, ideal and educational, on which were laid the foundations of the Union. This association with the Union was fittingly recognised when, in 1915, Leeds University conferred on him the degree of M.Sc. (*Honoris causa*) for his work in connection with the Yorkshire Naturalists' Union and natural history in Yorkshire.

Thomas William Woodhead was born in Holmfirth in 1863. He was originally associated with the woollen industry in Huddersfield, first as a half-timer, and then on an office staff. He acquired an interest in natural history from classes at the Mechanics Institute, and through acquaintance with

amateurs such as Chas. Crossland and Spencer, became first a member of the Huddersfield Naturalists' Society and then of the Yorkshire Naturalists' Union. When twenty-eight years old, he became a teacher of botany and zoology for evening classes in the Huddersfield Technical College, and two years later he took the momentous step of becoming a full-time teacher in the College, at first at a considerable financial loss. At his retirement he had been head of the Biology Department, largely his own creation, for over thirty years. He acquired and widened his training whenever opportunity offered, and attended University courses at Bonn, Leeds, Zürich and Cambridge, where he gained the friendship of botanists such as Strassburger, W. G. Smith, and especially Carl Schröter. He was a Ph.D. of Zürich, and became a Fellow of the Linnean Society in 1899. He was twice married but leaves no children. As a successful teacher he wrote a well-known botanical text-book. He found time to take a considerable part in municipal life, and was for some years a member of the borough Council. His civic interests were continued in his last publication, dealing with the history and development of the Huddersfield water supply.

Scientifically, Woodhead will be remembered especially for his ecological work. He was an original member of the British Vegetation Committee and the Ecological Society, of which he was President (1926-1927) and a member of the Council of the Freshwater Biological Association. His work on the ecology of woodland plants in Yorkshire was the first intensive study of British plant communities and of the plants in them. His later work on the Pennine peats and peat plants also opened up a line of enquiry which had been neglected in Britain. His work is marked by soundness and caution and possesses a shrewdness equally characteristic of the man himself.

To Woodhead, ecological studies logically led up to man himself, to local history and industries. Hence not only did he run classes in local geography, which helped to create what is now called regional survey, but this aspect of his ecological outlook finally found its fullest expression in the creation of the Tolson Memorial Museum, at Ravensknowle, near Huddersfield, which was entirely organised to show the relation of man to his surroundings. This remarkable museum is Woodhead's main contribution to national culture. After seeing almost every British museum, Sir Henry Miers described the Tolson Museum as the best really local museum he had seen, and paid a striking tribute to it as due to the dominating ideas of one man. It is now more ; it is a memorial to the man himself, and, as they look around Ravensknowle, visitors to it may well recall the famous motto on Wren's tomb in St. Paul's.

W. H. P.

A SEMMERWATER DIARY

J. P. UTLEY, B.Sc.

THE following is a record of weekly observations of bird life seen on Lake Semmerwater, or on its shores.

- 15-7-39—Mallard ; Heron (1) ; Snipe ; Sandpiper ; Curlew Sandpiper (1) ; Black-headed Gull ; Great Crested Grebe (2) ; Dabchick ; Moorhen ; Coot ; Redshank ; Greenshank (1).
- 22-7-39—Raven, pair feeding three young on Hawes End ; Mallard ; Common Scoter (1) ; Sheld-duck (3) ; Heron ; Snipe ; Sandpiper ; Redshank ; Black-headed Gull ; Herring Gull ; Great Crested Grebe (2) ; Dabchick ; Moorhen ; Coot.
- 30-7-39—Mallard ; Common Scoter (54) ; Snipe ; Sandpiper ; Redshank ; Sanderling (2) ; Lapwing ; Curlew ; Dabchick ; Moorhen ; Coot.
- 6-8-39—Devoid of birds ; Bank Holiday. Margins of lake crowded with campers, trippers, and fishermen.
- 12-8-39—Camps on the lake side. Mallard (5) ; Snipe ; Curlew ; Lapwing ; Moorhen ; Raven, four flew across valley.
- 19-8-39—Mallard ; Snipe ; Curlew ; Lapwing ; Lesser Black-backed Gull (8) ; Moorhen. A Sparrow Hawk chased a Starling across the lake, but it dived into the reeds and escaped.
- 26-8-39—Mallard ; Dabchick ; Snipe ; Curlew ; Lapwing ; Dunlin (4) ; Moorhen.
- 3-9-39—No visit.
- 10-9-39—Mallard ; Snipe ; Greenshank (1) ; Lapwing ; Lesser Black-backed Gull (5) ; Slavonian Grebe (1) ; Dabchick ; Moorhen.
- 16-9-39—Mallard ; Heron (3) ; Snipe ; Greenshank (1) ; Lapwing ; Herring Gull ; Dabchick ; Moorhen.
- 23-9-39—No visit.
- 29-9-39—No visit.
- 7-10-39—Mallard ; Heron (2) ; Snipe ; Curlew ; Lapwing ; Black-headed Gull ; Herring Gull ; Moorhen.
- 14-10-39—Mallard ; Snipe ; Curlew ; Moorhen.
- 21-10-39—Mallard ; Heron (1) ; Curlew ; Herring Gull. A twin-engined bomber dived at speed towards the lake, almost skimming the water ; this greatly disturbed the bird life.
- 28-10-39—Mallard (86) ; Widgeon (8) ; Snipe ; Curlew.
- 4-11-39—Mallard ; Widgeon ; Pocharde (4) ; Whooper Swan (11, including 3 young) ; Snipe ; Curlew ; Dabchick ; Great Crested Grebe (1) ; Moorhen. Considerable evidence was found of fish having been very recently eaten by a bird, presumably Osprey, which visits the lake.
- 11-11-39—Mallard ; Widgeon ; Sheld-duck (2) ; Whooper Swan (20 including 8 young) ; Scaup (2) ; Snipe ; Herring Gull ; Dabchick ; Moorhen.
- 18-11-39—Mallard ; Widgeon ; Whooper Swan (20) ; Heron (5) ; Snipe ; Dabchick ; Moorhen.
- 25-11-39—No visit.
- 3-12-39—Mallard ; Widgeon ; Whooper Swan (20) ; Bewick Swan (4) ; Snipe ; Curlew ; Oystercatcher (6) ; Dabchick ; Moorhen.

- 10-12-39—Mallard; Widgeon; Whooper Swan (20); Bewick Swan (4); Teal; Pochard; Snipe; Curlew; Dabchick; Moorhen.
- 17-12-39—Mallard; Widgeon; Whooper Swan (20); Snipe; Curlew; Dabchick; Slavonian Grebe (1); Moorhen.
- 24-12-39—Mallard; Widgeon; Whooper Swan (15); Snipe; Curlew; Dabchick; Moorhen.
- 31-12-39—Lake completely frozen, except for patch about 5 yards square in centre of lake. Mallard; Teal (2); Heron (1). The latter looked most ludicrous standing solemnly at the edge of the ice peering into the tiny patch of water.
- 7-1-40—Lake completely frozen. No bird life visible.
- 14-1-40—Lake completely frozen. Five Whooper Swan were sliding about on the ice, but soon left. By 3-30 p.m. 200 people were skating, spread over the entire surface of the lake.
- 21-1-40—Similar to previous week; 40° F. of frost registered.
- 28-1-40—Lake still frozen. Ground covered by heavy snow.
- 4-2-40—Similar to previous week. No bird life.
- 11-2-40—Similar to previous week. No bird life.
- 18-2-40—Similar to previous week. No bird life.
- 25-2-40—Except for a narrow strip about 2 yards wide all around the lake, the remainder was covered by a solid sheet of ice 9 inches thick. Mallard; Widgeon; Snipe; Curlew; Lapwing.
- 3-3-40—Lake again frozen all over.
- 10-3-40—Lake free from ice. Mallard; Widgeon; Black-headed Gull; Moorhen.
- 17-3-40—Heavy rain and dense mist; visibility nil; observation impossible. Curlew; Lapwing; Black-headed Gull heard.
- 22-3-40—Mallard; Widgeon; Teal; Sheld-duck (4); Shoveller (5); Snipe; Curlew; Lapwing; Redshank; Greenshank (several) Black-headed Gull; Herring Gull; Dabchick; Great Crested Grebe (a pair); Moorhen.
- 29-3-40—No visit.
- 7-4-40—Mallard; Widgeon; Snipe; Curlew; Lapwing; Redshank; Black-headed Gull; Dabchick; Great Crested Grebe (a pair); Moorhen.

Circumstances make further regular observations impossible. One or two things may be noted. The severe weather drove away the Swans which usually stay on the lake until May. The meagre return of shore birds is disappointing; this, I think, is largely due to the fact that there is no extensive mud flat. Except for one small point all the shore is shingle, though there are restricted patches of dense reeds at the head of the lake.

As a result of my observations I find that the lake is not the quiet spot I hoped it would be; the bird life on and around it is often disturbed, for on fine days, even in winter, people come to the lake foot by car, get out, and wander up and down either side.

I consider the lowering of the level of the lake has done away with a large tract of ground which once served as a feeding ground for many shore birds.

Apart from the severe frost, weather conditions did not materially affect the bird population.

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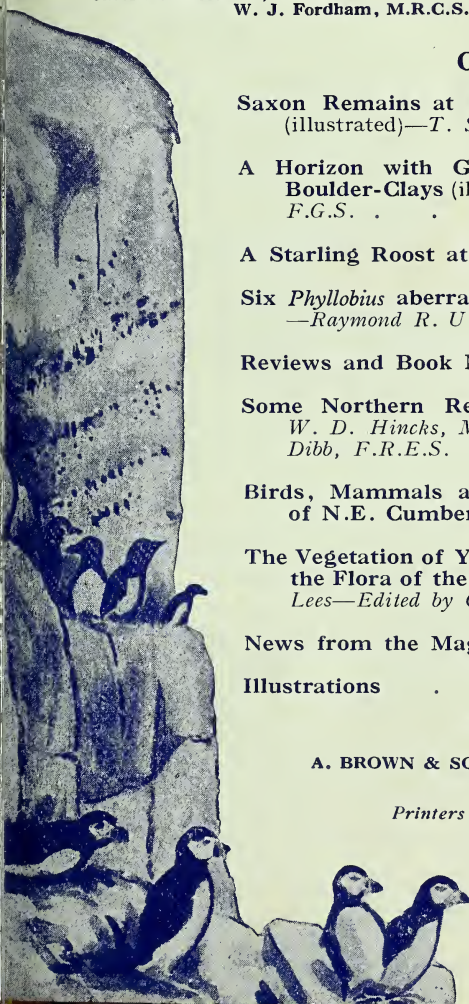
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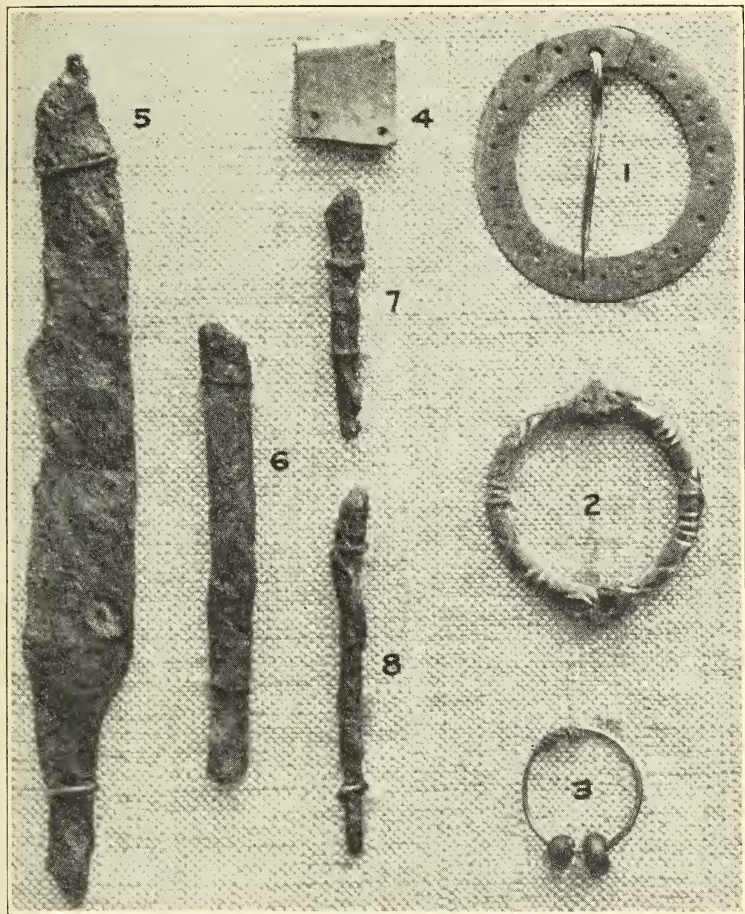
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SAXON REMAINS AT ELLOUGHTON, EAST YORKSHIRE

T. SHEPPARD, M.Sc.

DURING the recent construction of a house and the adjoining



garden for Mr. T. H. Buck, at Elloughton, East Yorkshire, some interesting discoveries were made. The house is on the top of a hill, at a height of 100 ft. above O.D., and at a distance of 2 miles from the Humber, of which estuary there is a magnificent view from the top of the hill.

Quite near to the surface some skeletons were found at a depth of 1 to 1½ ft. only, in a gravelly deposit which forms the

capping of the hill. At first nothing was found with any of the bones, but the condition of the teeth indicated that they were certainly not pre-historic. A careful examination of the bones revealed that they were those of both men and women, and one child. But they had not been placed in a cemetery in the ordinary way. They had been thrown hurriedly into shallow pits, possibly after having been killed in a skirmish. They were placed anyhow. In one case a man of remarkably powerful build was thrown into the same pit as a middle-aged woman, and lay at right angles across her body. The child seems to have been buried in a sack. Other bodies had been thrown in, face downwards. One skeleton was perfect—except that the head was missing.

Two of the women had apparently been buried in their clothes, and had circular brooches lying near the breast bone. One of the brooches (No. 1) is unusual in pattern, the ends of the broad piece of bronze having been joined together to make a circle and held by a well-made bronze pin, still preserved intact, both being covered by a bright green patina. The brooch is $1\frac{3}{4}$ in. in diameter, made of a strip of bronze $\frac{1}{4}$ in. wide, and is decorated by 18 punch-like punctures each being surrounded with an engraved ring. These are close together on the right hand side of the pin, and gradually widen apart towards the other extremity.

No. 2 is a beautifully decorated brooch, made from a cylindrical piece of bronze wire, and had originally an iron pin, though this has disappeared. This has a bronze fitting at the top. The brooch is $1\frac{1}{2}$ in. wide, the bronze being just over $\frac{1}{8}$ in. thick, and decorated by four sets of incised lines, each pointing to the centre of the brooch, and between these are deeply cut crosses.

With the bones of the child was a twisted silver wire ring (No. 3) with two green-blue glass beads. This is $\frac{3}{4}$ in. in diameter, and the two small beads have large perforations for threading.

From the same site was part of a fastening of a bronze strap (No. 4). This has perforations for two rivets, one of which, of bronze, remains in position. It is decorated on the top by horizontal and perpendicular lines, made with a tool giving small punch-like impressions 30 to the inch.

With one of the male skeletons was a typical scramasax, or one-edged knife, with tang for a handle (No. 5). This is $5\frac{3}{4}$ in. in length and $\frac{3}{4}$ in. in width, and with it was a square piece of iron (No. 6), 3 in. long and $\frac{1}{4}$ in. wide, evidently a 'sharpener,' examples of which have been recorded elsewhere in the East Riding.

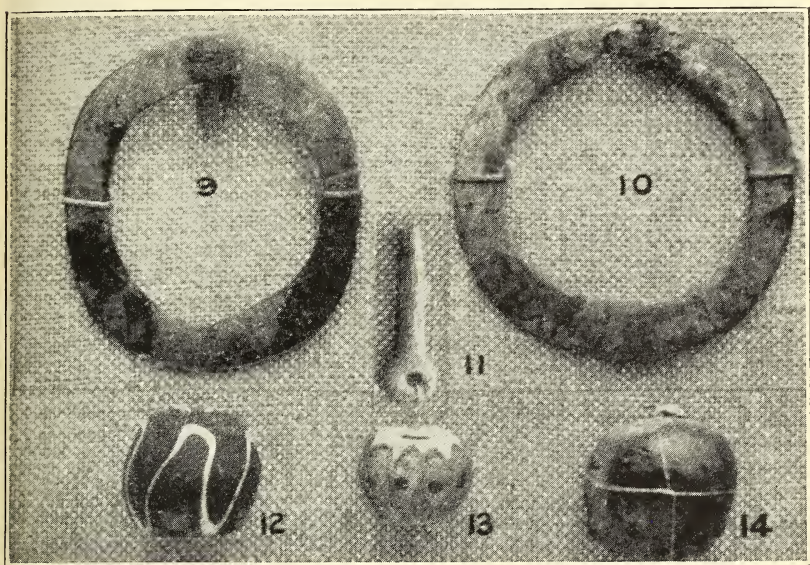
Nos. 7 and 8 are two pointed pieces of iron, which may have been the points of awls or prickers, or, they may have

been part of a Saxon key. No. 7 is $1\frac{1}{4}$ in. in length and No. 8 $2\frac{1}{2}$ in.

The specimens are in the Mortimer Museum at Hull.

From the same site, and presented by Mrs. Buck, are two penannular brooches, the remains of a bone needle, and three beads.

The first (No. 9) is a flat brooch which has been much worn and still retains a part of the iron pin. It is $1\frac{7}{8}$ in. by



$2\frac{1}{8}$ in. in diameter, the flat bronze varying, but averaging $\frac{1}{4}$ in. in width, and it is decorated by two rows of punctures, one on the outside and one on the inside, separated by four incised lines, each pointing towards the centre of the brooch.

No. 10 is somewhat similar but more regular in shape, and is $2\frac{1}{8}$ in. in diameter, it has a depression for the handle of the pin, which was of iron, and has decayed, though remains of rust still adhere to the brooch. There is a very thick coat of patina on this brooch, which almost hides any decoration, though this was probably similar to that on No. 9.

No. 11 is a bone needle the point of which is broken, the part remaining being 1 in. long, but originally it cannot have been much longer, which almost suggests that it might have been the pin of a small brooch or buckle.

No. 12 is a particularly fine and large bead of red glass, decorated with an inserted white wavy line, which divides

the bead into ten sections, and in the thick part of each of these waves is a circular dab of light yellow glass. This bead is $\frac{3}{4}$ in. wide and $\frac{3}{4}$ in. high, and the hole for threading is $\frac{1}{4}$ in. in diameter.

Of a similar type is a slightly smaller bead of white glass (No. 13) which has had thin bands of glass pressed in, dividing the sides of the bead into ten lozenges, in the centre of each of which is a small red disc of glass about the size of a pin-head. The wavy pieces of glass have weathered out, leaving deep furrows in which they were inserted. This bead measures $\frac{3}{4}$ in. in width and $\frac{1}{2}$ in. in height, and the hole for threading is $\frac{1}{8}$ in. across. No. 14 is a large roughly-shaped spherical bead, with slightly flattened sides, of red amber. It measures 1 in. across and has a small hole drilled through the centre.

With regard to the date of the various objects described, generally speaking these would unquestionably be referred to as Anglo-Saxon, but in view of the conditions under which the skeletons were found, and the somewhat unusually large size of the brooches and the nature of the beads, there is just a possibility that they may be of Viking origin. This seems more probable when a comparison is made with the undoubted Viking objects from the tumulus at Efaefsk in Russia, described in *Hull Museums Publication No. 13*. This particularly wealthy tumulus yielded some objects very similar to those now described, and a selection from them can also be seen in the British Museum at Bloomsbury.

We are indebted to Mr. Buck for the opportunity of making the excavations and securing the skeletons, and some of the objects; and to Mrs. Buck for the objects Nos. 10 to 14.

Adaptive Coloration in Animals, by Hugh B. Cott, pp. xxxii+508, illustrated by the author, with coloured frontispiece, 48 monotone plates and numerous illustrations in the text. Methuen, 40/-. This book gives a very complete survey of the present position in the study of animal coloration. Dr. Cott arranges his subject in three main sections. These are headed Concealment, Advertisement, and Disguise. It is strange to find that even to-day there are many biologists who do not admit evolved mimicry, warning coloration, and the like. Dr. Cott confronts this school with an overwhelming host of examples, and with all his innumerable facts marshalled with great skill. Even the briefest summary of his important work would occupy several pages of our journal. Here is a quotation from the introduction, written by Dr. Julian Huxley: '*Adaptive Coloration in Animals* is perhaps the most satisfactory book yet written on adaptation. It brings together great masses of data, from the field, the museum, and the laboratory, analyses them in the light of established physical and psychological principles and deals satisfactorily with the methodological problem of establishing proof of their adaptive nature.' The illustrations are very good indeed, and by themselves would form a useful guide to war-time students of camouflage.

A HORIZON WITH GYPSUM IN THE HOLDERNESS BOULDER-CLAYS

W. S. BISAT, M.Sc., F.G.S.

REFERENCE has been made in an earlier paper (*The Naturalist*, 1932, p. 217) to the occurrence, at the summit of each of many beds of boulder-clay in Holderness, of sporadic friable or earthy caps of clay, forming a 'head' to the main mass of the clay bed; and also of streaks of undigested material of various types at the same level. These streaks fall readily into three groups, coloured white, red, and grey respectively. The white masses consist of chalk, more or less pugged; the red bands consist in the main of Triassic material, mixed with other erratics; and the grey streaks, which vary between blue-grey and drab according to their constituents, consist mainly of Liassic detritus or Lake District and Pennine-Cheviot stony boulder-clay.

I have referred earlier (*op. cit.*, p. 217) to the remarkable fact that these intercalated grey or green bands never contain chalk fragments, which is rather surprising in view of the immense amount of chalk in the boulder-clays above and below, and the presence of the chalk escarpment to the north, over which the ice must have passed.

During the last two years, plotting of longitudinal sections has revealed a further striking fact: namely, that in several cases, possibly in all, both red and grey bands maintain a persistent individuality along many miles of sections. It is true that the bands are intermittent, but they are nevertheless persistent at their own horizon and characteristic of it.

The object of this note is to put on record the occurrence of gypsum in one such band. This particular band, which is of a red colour, and is rich in Triassic sandstone, occurs at the top of the lowest bed of purple boulder-clay; 'Lower Purple (a)' of my paper in *The Naturalist*, 1939, p. 135. In the intermittent red band at the top of this bed of boulder-clay, and often embedded in the upper part of the clay itself, occur frequent fragments of gypsum, varying in size from minute splinters up to blocks a foot or so in length. The horizon is exposed between Withernsea and Hornsea, in the five-mile section which lies from Tunstall northwards past Garton and Aldborough to Cowden, and along this stretch of coast when the cliff-sections are clear and expose the horizon, fragments of gypsum may usually be found at the level indicated. Especially large pieces were seen by members of the Hull Geological Society in 1939 about a mile north of Aldborough, and also about a quarter-mile south of the same place.

At the same horizon also occur streaks of blue Liassic shale with belemnites, Neocomian clay with belemnites, and small

fragments of recent marine mollusca. Rather remarkably, *Dentalium*, otherwise unknown on the coast except in the Sub-Basement boulder-clay, has occurred at this horizon near Garton.

The boulder-clay on which (or in the upper part of which) these gypsiferous bands occur, itself takes the form of long, somewhat lenticular masses up to eight feet or more thick in the hollows of the underlying Upper Drab clay. It is of a somewhat redder colour than the bed above, and may most readily be detected by following the top of the grey, chalky Upper Drab boulder-clay.

It would seem that this gypsum band may well be an horizon which may be picked up elsewhere on the coast, as for instance in Filey Bay or at Uppgang, near Whitby, but it has not yet been detected elsewhere than the Aldborough area.

The discovery of the persistence of this gypsum at one horizon, the only horizon at which it is known, naturally led to the closer examination of other bands and horizons, to see if they possessed a similar recognisable individuality. This has proved to be so.

At the top of the next highest bed of Purple boulder-clay above the gypsum band—Lower Purple (*b*)—there is a persistent greenish-grey stony band, visible in the length of coast from Holmpton past Withernsea to Garton, a distance of about ten miles. This band is marked by an unusual abundance of greywackés, and has Carboniferous limestone as a frequent auxiliary erratic. The band is often thick, thicknesses of a foot or more being general and it is very stony. Where the greywackés are most abundant, it is decidedly greenish in colour. It never contains any chalk fragments.

As a complete contrast to the grey bands may be mentioned the cakes and streaks of pugged white chalk with occasional *Belemnitella mucronata*, which occur persistently for several miles at the top of the Lower Drab boulder-clay north of Hornsea, as far as Skipsea.

How then were these peculiar bands formed?

The orthodox theory is that this material was brought down from the north in a solid sheet of ice, filling the basin of the North Sea and resting on its floor. North of Flamborough Head, the beds above and below the bands contain no chalk, while south of the headland, chalk erratics are quite common in them. Again following orthodox theory, the beds of boulder-clay are supposed to have picked up the chalk erratics from the chalk outcrop of Flamborough Head, which, of course, seems quite reasonable. But the crux of the matter is, why did not the grey bands pick up chalk also, in common with the rest of the advancing ice-sheet? It seems quite obvious that the grey band was never in contact with the

HOLDERNESS BOULDER-CLAY BANDS.

DIVISION	DISTINCTIVE BANDS (with significant erratics).
Upper Purple.	
c	
Lower Purple.	Greywackés and Carb. Limestone.
b	
a	Shell fragments. Gypsum, Liassic and Neocomian clays.
Upper Drab.	
	Various bands (red, white, and grey).
Middle Drab.	
	Chalk with <i>B. mucronata</i> . Shell fragments.
Lower Drab.	
Sub-Drab.	
	Silts with various bands at base. Shell fragments.
Basement Drab.	Red streaks with Pal. rocks. Blue streaks with Carb. Limestone. Chalk and black flint.
Basement.	
	Brown streak with Mag. Limestone.
Sub-Basement.	

chalk, and if this is so, we may again ask ourselves how the beds immediately above it could be in contact with the solid chalk.

These bands, however, can hardly be considered apart from the general question of the mode of deposition of the main beds of clay, and any theory of the manner of formation of these must furnish a satisfactory explanation of the following phenomena :

- (1) That there are many (say fifteen) individual beds of boulder-clay, usually with traces of normal sediments between them.
- (2) That each bed of boulder-clay is a homogeneous paste in which all trace of the constituent parent beds has been lost, and which is often seen to retain its uniform and distinctive colour for miles.
- (3) That the erratics in the clay, even of comparatively soft shale (as for instance Liassic shale), show no evidence of breaking down into paste. That is, there is no sign of a mosaic or transition stage from a splinter of shale to a homogeneous paste.
- (4) The erratics are from many distinct points of the compass, and are extremely well mixed, showing only slight local enrichments.
- (5) That cakes or rafts of stony grey boulder-clay, red Triassic marly boulder-clay, or pugged soft chalk, occur as streaks at most junctions between the main boulder-clay beds. These tend to be distinctive of horizons.
- (6) Where distinct rafts are absent, their erratics are sometimes found enriching the clay beneath.
- (7) That the grey rafts are always chalkless, and occur between chalky boulder-clays.
- (8) That where two or more distinct types of raft are in juxtaposition, the junction is a knife-edge one, and there is no mixing or fusing of one band with the other.
- (9) Occasional pale-grey bands occur at the summit of a bed of boulder-clay, and appear to indicate absorption of a chalk raft into the main mass of boulder-clay. The depth of absorption is usually about eighteen inches.
- (10) Where boulder-clay rests on sand or silt there is no disturbance of the underlying bedding.
- (11) Where the base of the drifts is seen and the junction of the lowest bed of boulder-clay and the underlying rock can be examined, as, for instance, in Robin Hood's Bay, there is no sign of disturbance of the rock head or of incorporation of masses of this bed in the

overlying boulder-clay. Such minor and very shallow lifting and loosening of the rock as may occasionally be seen is obviously due to weathering and frost action.

It is difficult to envisage a set of conditions in an ice-sheet under which, on the one hand, the softest beds, such as clays and marls, were ground down and thoroughly mixed with one another into a paste so homogeneous that it maintains its distinctive colour for many miles ; while on the other hand, at the same time as this tremendous abrasion and mixing was going on, and in the same portion of the ice-sheet, such relatively soft erratics as Liassic shale were being transported scores of miles, and surviving with, in most cases, little or no obvious signs of abrasion.

It seems also true that an ice-sheet of the thickness generally postulated under the orthodox theory, would be little if at all affected by the low cliffs of the greater part of the Yorkshire coast, which it would override to a far greater extent than is in fact the case, and spread inland instead of hugging the coast-line.

It therefore becomes necessary to reconsider our basic conceptions. We may perhaps on reflexion feel more than a little dubious of the effective value of an ice-sheet as a mixing agent. Such an ice-sheet, moving over and resting on the ground, is a solid itself, and although it may mix materials lying along successive points in its line of advance, this is a vastly different matter from mixing materials lying at right-angles to such direction. Yet the Holderness boulder-clays include erratics drawn from a very wide arc of country lying to the east, west, and north, and possibly even south. These must have been brought down by tributary ice-streams from widely separated areas, and their thorough mixing argues a flexibility unattainable in a solid ice-cap.

Some different agency seems, therefore, to have been at work, and, so far as I can see, the only possible solution is that it was freely floating ice.

I would therefore suggest that the blends of soft material constituting the clays can only have been produced by the transport, embedded in floating ice, of innumerable patches or swabs of soft parent beds of several distinct types, such as Secondary clays and marls, followed by complete disintegration of these patches on melting, the suspension and thorough mixing of the constituent particles in water, and their subsequent settlement to form the clay we now see. At the same time as this process was going on, fragments of the harder rocks in all conditions of abrasion, from perfectly fresh angular lumps to rounded pebbles, were, of course, being simultaneously transported without any further scrubbing, and deposited *pari passu* with the clay.

The cakes or rafts of distinctive material (as, for example, the gypsum band) are most conveniently thought of as rafts of detritus, melted out from stranded ice-floes. With this conclusion, the occasional enrichment of the upper part of the boulder-clay beneath, by scattered erratics of the same type as those found in the rafts, is in accord, as a melting floe would inevitably release part of its load as individual erratics at various points along its course before stranding or subsiding on to the sub-aqueous floor.

In the initial stages of the formation of a boulder-clay bed, and when its thickness was only a few inches, it would appear that erratics dropped in it would sink to the bottom of the clay, coming to rest on the sedimentary floor beneath (usually sand or silt). This seems to furnish a reasonable explanation of the line of pebbles frequently embedded in the base of a bed of boulder-clay.

There seems no difficulty in visualising the whole of these processes, except that, of course, the assumption demands a certain degree of subsidence (or rise in sea-level) throughout the coastal area affected, in order to achieve the necessary depth of water for transport of the ice. There are estuarine silts at 90 feet O.D. at Kirmington; the boulder-clay reaches well over the 125-foot contour at Dimlington; while on the south side of Robin Hood's Bay the low-level drifts certainly seem to rise at least to the 300-foot contour.

This gives us some measure of the degree of subsidence required. There is, however, another method of approach to the problem, through study of the condition of the erratics contained in the clays. These, with few exceptions, show little sign of having been exposed for any length of time to sub-aerial weathering, or, in other words, of having been derived from the surface of a land area. Even the abundant granite erratics, though often water-worn, seldom show any appreciable disintegration through weathering. On the other hand, while erratics coated with marine growths are absent, flints covered with the glossy brown skin characteristic of exposure on the littoral are numerous, and it seems fair to assume that a large percentage of the erratics were actually derived from coast-line strands. That boulder-clays which to-day fringe the coast-line should contain fragments from the glacial or pre-glacial littoral, suggests that the elevation since glacial times has here, possibly with local exceptions, been relatively unimportant.

If, however, we carry our researches northwards from Holderness up the coast, sooner or later we shall come within the ambit of the 'overflow channel' area of the Cleveland. In such an area it becomes necessary to consider how far a theory of moderate submergence fits in with the presence of

these channels, and with the current 'overflow channel' theory. It seems obvious that ice, drifting on a sea with a surface level 150 to 300 feet above the present sea-level, could not pond back the melt waters of the Cleveland Hills and produce great gorges at 600 feet O.D. Here, however, we find that the connection between the great Jugger Howe series of channels and the boulder-clays forming an undulating plateau 300 to 400 feet below in Robin Hood's Bay, has not been satisfactorily established. Indeed, the high level channels seem more closely connected topographically with the high-level drift, with its large percentage of quartzites and rocks of Western affinities, an assemblage considerably different from that met with in the sea cliffs.

It is suggested that the high-level drift may be Older Drift and the low-level drift Newer Drift, but here an opinion must wait on further fieldwork.

A STARLING ROOST AT DEWSBURY

W. PICKLES

A STARLING roost has existed at Bywell, Leeds Road, Dewsbury (about half a mile along the Leeds Road from Dewsbury) for about thirty years. This roost was not mentioned in the survey of starling roosts made by B. J. Marples.¹

Details of the roost have been kindly sent to me by Mr. R. A. Balden, the owner of the property on which the roost is to be found. He states that there appear to be thousands of starlings in the summer months; but only about thirty or so stay there for the winter. At one time the house and grounds were the only ones in the locality; but in recent years there has been much building of dwelling houses round it. One peculiarity noted by Mr. Balden is that the number of starlings has increased even with the increase of the number of houses.

At the beginning of the season a few birds arrive, and eventually they hatch out the young ones. By August there are thousands of starlings, which always use the same part of the garden. This they leave early in the morning and return in the early evening. The rest of the evening, states Mr. Balden, they spend on the tree tops and hedges of one particular part of the garden: they hardly ever attack the fruit garden.

In September they practise for their flight elsewhere for the winter months. They fly round in large numbers and 'bank' in unison. As the autumn comes on, they settle on trees nearer the house and later, on the house itself, rows of birds perching on every ridge of the house. Suddenly they depart, except for the few which always stay over the winter.

¹ Marples, B. J. (1934) 'The winter Starling Roosts of Great Britain, 1932-1933,' *Journ. Anim. Ecol.*, 3, 187-203.

SIX PHYLLOBIUS ABERRATIONS NEW TO GREAT BRITAIN

RAYMOND R. U. KAUFMANN

Of the many Continental aberrations of this genus, quite a number are to be found in this country. A careful re-examination of specimens classified as specific will probably reveal examples of the undermentioned aberrations, to which short descriptions sufficient to identify them from the type forms have been added. Classifications are based upon Kuhn's *Illustrierte Bestimmungstabellen der Kaefer Deutschlands* (1913) and Reitter's *Fauna Germanica, die Kaefer*, V (1916).

- P. calcaratus* Fabr., *a. atrovirens* Gyll. The body is clothed with greyish-green scales. The elytral scales do not completely cover the surface and there remain small bare patches, forming an indistinct pattern. The legs are reddish, with darker tarsi. With the type on nettles, but uncommon. 29/5/32, Finchley, Middlesex; 20/5/36, Pannal Ash, Yorkshire.
- P. calcaratus* Fabr., *a. densatus* Schilsky. In this aberration the elytra are thickly and evenly covered with greyish-green or green scales, no patchiness being present. The femora are dark. From nettles, and more common than the above. 24/5/32, Finchley; 17/5/36, Pannal Ash.
- P. pyri* Linn., *a. mali* Gyll. Distinguished by its black limbs and antennæ. By sweeping off trees with the type, but rare. 11/6/33, 5/5/35, Pannal Ash; 22/5/39, Goathland, Yorkshire.
- P. pyri* Linn., *a. vespertinus* Fabr. With reddish-yellow legs and antennæ, of which only the club is a little darker in colour. The scales are generally coppery. Commonly taken with the type by sweeping off trees. 18/5/32, 22/5/32, Finchley; 29/4/35, 5/5/35, 17/5/36, Pannal Ash.
- P. argentatus* Linn., *a. viridans* Bohem. Covered with greenish scales and with reddish-yellow legs. By general sweeping, but by no means common. 7/6/36, 21/6/36, Pannal Ash.
- P. viridiævis* Laich., *a. pseudochlorizans* Reitt. With yellow limbs and antennæ. By beating and sweeping. Quite common with the type. 3/6/28, 24/5/32, 29/5/32, Finchley; 26/5/36, Pannal Ash. Examples of all the above aberrations are in *coll. meâ*.

Light and Colour in the Open Air, by M. Minnaert. Translation made by H. M. Kremer-Priest and revised by K. E. Brian Jay, pp. xii+362. Bell, 15/-. This is one of those all too rare books which present scientific phenomena and the associated theories in an entrancing manner and yet with no departure from meticulous accuracy. Here we can read of the colour of the sky, haloes and rainbows, the mirage effects observable on hot asphalt roads and on the seashore even in our own country, light and colour in landscape, luminous plants, animals and stones, and so on. Reflection and refraction of light are, of course, dealt with in early chapters and the remainder of the book follows logically. Here are one or two subjects selected at random; the 'green ray,' twinkling of stars, spectre of the Brocken, and the colour of water. The author's style is charming and the translator has done his work very well. There are 160 illustrations.

SOME NORTHERN RECORDS OF ICHNEUMONIDÆ

W. D. HINCKS, M.P.S., F.R.E.S., AND J. R. DIBB, F.R.E.S.

FOR some years past we have been collecting Ichneumonidæ with the very able assistance of Mr. John Wood ; in fact it is to Mr. Wood's efforts that we owe by far the biggest proportion of our now extensive materials of this family. We would particularly wish to acknowledge here our deepest gratitude to our friend for the pains he has taken in collecting and mounting, in his usual meticulous manner, several thousand specimens.

Accurate determination in the Ichneumonidæ is still a matter of considerable difficulty and the utmost care is required to prevent inaccuracies which would lead to entirely erroneous ideas of distribution. For this reason, and because of Mr. Wood's consistent collecting, we have accumulated a large number of undetermined specimens of this interesting family.

The short preliminary list which follows gives a few species, the determinations of which are in no doubt, and we are extremely grateful to Mr. G. J. Kerrich, of the Manchester Museum, and Mr. J. F. Perkins, of the British Museum, for many of the determinations.

ABBREVIATIONS

J.W.	=	Collected by John Wood.
W.D.H.	=	„ W. D. Hincks.
J.R.D.	=	„ J. R. Dibb.
(G.J.K.)	=	Determined by G. J. Kerrich.
(J.F.P.)	=	„ J. F. Perkins.
(W.D.H.)	=	„ W. D. Hincks.
(J.R.D.)	=	„ J. R. Dibb.

ICHNEUMONIDÆ

Cratichneumon rufifrons (Grav.).

Shipley Glen : 1♀, 16/6/34, J.W. (G.J.K.).

C. albilavatus (Grav.).

Shipley Glen : 1♂, 26/5/34, J.W. (G.J.K.).

C. lanius (Grav.).

Keighley, Holmehouse Wood : 2♂♂, 1/6/35, 2♂♂, 8/6/35, 1♂, 15/6/35, J.W. (G.J.K.).

Ichneumon deliratorius L.

Keighley, Holmehouse Wood : 1♂, 26/8/30, 1♂, 8/8/35, 1♂, 19/9/37, J.W. (G.J.K., W.D.H.).

Keighley, Newsholme Dene : 1♂, 24/8/35, J.W. (G.J.K.).

I. xanthorius Forst.

Grange-over-Sands (Lancs.) : 1♀, -/4/24, on sallow blossom, W.D.H. (W.D.H.).

Chasmias motatorius (F.).

Keighley, Holmehouse Wood : 1♀, 25/8/34, J.W. (G.J.K.).

Keighley, Newsholme Dene : 1♀, 24/8/35, J.W. (G.J.K.).

Amblyteles armatorius (Forst.).

Keighley, Holmehouse Wood : 1♂, 6/7/35, 1♂, 7/7/35, J.W. (G.J.K.).

Keighley : 1♂, 4/8/37, J.W. (W.D.H.).

Keighley, Howden Rough : 1♂, 12/8/30, J.W. (G.J.K.).

Aberford : 2♂♂, 27/7/37, J.W. (W.D.H.).

Leeds, Oakwood : 1♂, -/7/39, 1♀, 2/9/39, W.D.H. (W.D.H.). This female example 'stung' sharply.

A. castanopygus (Steph.).

Bolton Woods : 1♂, 7/9/35, J.W. (G.J.K.).

Keighley, Holmehouse Wood : 1♂, 19/9/36, J.W. (W.D.H.).

Eurylabus tristis (Grav.).

Rawcliffe Rabbit Hills : 1♀, 4/8/34, J.W. (G.J.K.).

Alomyia debellator (F.).

Keighley, Holmehouse Woods : 1♂, 2/6/34, 1♂, 25/8/34, 1♂, 19/5/35, 1♂, 20/6/35, 1♀, 2/7/35, 2♂♂, 31/5/36, 1♂, 15/8/37, J.W. (W.D.H.).

Keighley : 1♀, 5/10/34, 1♀, 22/8/35, J.W. (W.D.H.).

Keighley, Marley : 1♂, 10/7/37, J.W. (W.D.H.).

Keighley, Harden Moor : 1♂, 9/6/34, J.W. (W.D.H.).

Leeds, Roundhay : 1♂, 27/6/31, J.R.D. (W.D.H.).

Ripon : 1♂, 17/6/39, J.R.D. (W.D.H.).

Burton-in-Lonsdale : 1♂, 10/6/35, J.W. (W.D.H.).

Skipwith Common : 2♂♂, 5/6/37, W.D.H. (W.D.H.).

CRYPTINÆ

Microcryptus perspicillator (Grav.).

Buttercrambe Woods : 1♂, 22/6/35, J.W. (W.D.H.).

M. abominator (Grav.).

Skipwith Common : 1♂, 13/5/33, J.W. (W.D.H.).

Stylocryptus profligator (F.).

Keighley, Holmehouse Wood : 1♀, 16/8/36, J.W. (W.D.H.).

Keighley, Marley : 2♀♀, 28/7/37, 3♀♀, 24/7/37, 1♀, 4/8/37, 1♀, 26/7/37, J.W. (W.D.H.).

Bolton Woods : 1♀, 17/7/37, J.W. (W.D.H.).

Aberford : 1♀, 25/7/36, 1♀, 27/7/37, J.W. (W.D.H.).

Leeds District : 1♀, 10/8/30, J.R.D. (W.D.H.).

Allerthorpe : 1♀, 15-16/8/25, W. J. Fordham (W.D.H.).

S. suffolciensis Morley.

Aberford : 3♀♀, 25/7/36, J.W. (W.D.H.).

Phygadeuon nyctemerus Grav.

Keighley, Holmehouse Wood : 1♀, 29/9/35, J.W. (G.J.K.).

Keighley, Gill Grange : 1♀, 14/9/35, J.W. (G.J.K.).

Leptocryptus claviger (Tasch.).

Crimsworth Dene : 1♀, 10/8/35, J.W. (G.J.K.) (specimen in Cambridge Zoological Museum collection).

Hemiteles similis (Gmel.).

Keighley, Holmehouse Wood : 1♀, 25/9/34, 1♀, 6/10/34, 1♀, 7/10/34, J.W. (G.J.K.).

H. areator (Panz.).

Keighley, Holmehouse Wood : 1♀, 28/8/33, 1♀, 13/6/34, bred 19/8/34, J.W. (W.D.H.).

Keighley, Newsholme Dene : 1♀, 12/7/35, J.W. (W.D.H.).

Shipley Glen : 1♀, 22/6/33, bred 9/7/33, J.W. (W.D.H.).

Fountains Abbey, Skell Valley : 1♀, 7/8/33, J.W. (W.D.H.).

Leeds, Oakwood : 1♀, 30/8/38, W.D.H. (W.D.H.).

Stilpnus gagates Grav.

Keighley, Holmehouse Wood : 1♂, 20/6/35, 1♂, 6/7/35, 1♀, 21/9/35,
1♂, 29/9/35, J.W. (W.D.H.).

Keighley, Gill Grange : 1♂, 12/10/35, J.W. (W.D.H.).

Keighley, Newsholme Dene : 1♂, 24/8/35, J.W. (W.D.H.).

Keighley, Harden Moor : 1♂, 11/8/35, J.W. (W.D.H.).

Exolytus lævigatus (Grav.).

Hovingham : 1♂, 3/8/35, J.W. (W.D.H.).

Habrocryptus porrectorius (F.).

Shipley Glen : 1♀, 1/8/35, J.W. (G.J.K. as var.).

PIMPLINÆ

Rhyssa persuasoria (L.).

Whitby, West Cliff : 1♀, 13/7/39, J.R.D. (J.R.D.).

Perithous divinator (Rossi).

Arnside (Lancs.) : 1♀, 19/8/34, J.W. (J.F.P.).

Pimpla flavicoxis Thoms.

Keighley, Newsholme Gill : 1♀, 14/7/34, J.W. (J.F.P.).

Keighley, Harden Moor : 1♀, 11/8/35, J.W. (J.F.P.).

Keighley, Holmehouse Wood : 1♀, 22/9/30, 1♀, 29/7/34, 1♀, 23/9/34,
1♀, 27/9/34, 1♂, 1♀, 22/10/34, 1♂, 1♀, 8/8/35, 1♀, 27/8/36, J.W.
(J.F.P., W.D.H.).

Silsden, Throup Gill : 1♂, 5/6/34, J.W. (J.F.P.).

Hovingham : 1♂, 3/8/35, J.W. (J.F.P.).

Epiurus brevicornis (Grav.).

Keighley, Harden Moor : 1♀, 11/8/35, 1♀, 20/7/35, 1♀, 19/9/36, J.W.
(J.F.P., W.D.H.).

Keighley, Wycoller Dene : 1♀, 29/8/36, J.W. (W.D.H.).

Keighley, Marley : 1♀, 22/8/36, J.W. (W.D.H.).

Keighley, Holmehouse Wood : 1♀, 9/8/36, J.W. (W.D.H.).

Allerthorpe Common, 1♀, 31/7/34, J.W. (J.F.P.).

Ousefleet, 1♀, 6/8/34, J.W. (J.F.P.).

E. detritus (Holmgr.).

Buttercrambe Woods : 1♀, 22/6/35, J.W. (J.F.P.).

Itoplectis alternans (Grav.).

Shipley Glen : 1♀, 1/8/35, J.W. (J.F.P.).

I. maculator (F.).

Keighley : 1♀, 29/8/34, J.W. (J.F.P.).

Keighley, Holmehouse Wood : 1♂, 29/7/34, 1♀, 27/4/35, 1♂, 6/7/35,
1♂, 21/7/35, 1♀, 13/10/35, J.W. (J.F.P.).

Fountains Abbey, Skell Valley : 1♀, 23/6/34, J.W. (J.F.P.).

Leeds, Blackmoor : 1♀, 22/3/31, J.R.D. (J.F.P.).

Arnside (Lancs.), 1♂, 28/7/35, J.W. (J.F.P.).

Tromatobia oculatoria (Grav.).

Keighley, Holmehouse Wood : 2♀♀, 7/10/34, J.W. (J.F.P.).

Malham : 1♀, 21/7/34, J.W. (J.F.P.).

Apechthis resinator (Thunb.).

Keighley, Holmehouse Wood : 1♀, 21/9/35, J.W. (J.F.P.).

Bolton Woods, 1♂, 18/5/35, J.W. (J.F.P.).

Clistopyga incitator (F.).

Keighley, Holmehouse Wood : 1♀, 6/7/35, J.W. (J.F.P.).

Glypta elongata Holmgr.

Keighley, Holmehouse Wood : 1♂, 28/6/34, J.W. (J.F.P.).

G. trochanterata Bridg.

Fountains Abbey, Skell Valley : 1♀, 23/6/34, J.W. (J.F.P.).

G. sculpturata Grav.

Leeds District : 1♀, 6/8/30, J.R.D. (J.F.P.).

G. mensurator (F.) Grav.

Keighley, Holmehouse Wood : 1♀, 1/8/35, J.W. (J.F.P.).

Shipley Glen, 1♀, 1/8/35, J.W. (J.F.P.).

Leeds District, 1♀, 6/8/30, J.R.D. (J.F.P.).

Stilbops vetula (Grav.).

Fountains Abbey, Skell Valley : 1♀, 23/6/34, J.W. (J.F.P.).

Lissonota bellator Grav.

Keighley, Holmehouse Wood : 1♀, 16/9/30, J.W. (J.F.P.).

Shipley Glen, 1♀, 1/8/35, J.W. (J.F.P.).

Leeds District : 1♀, 6/8/30, J.R.D. (J.F.P.).

L. variipes Desv.

Keighley, Holmehouse Wood : 1♀, 26/8/34, 1♀, 24/9/34, 1♀, 29/9/35, J.W. (J.F.P.).

L. cylindrator (Vill.).

Keighley, Holmehouse Wood : 1♀, 16/8/34, J.W. (J.F.P.).

L. sulphurifera Grav.

Keighley, Holmehouse Wood, 2♂♂ 1♀, 27/9/34, 1♀, 7/10/34, 1♂ 1♀, 13/10/34, 1♂, 20/9/35, 2♂♂ 2♀♀, 29/9/35, 1♂, 5/10/35, 2♂♂, 6/10/35, 1♀, 20/9/36, 1♀, 26/9/36, J.W. (J.F.P., W.D.H.).

Keighley, Gill Grange : 1♂, 14/9/35, J.W. (J.F.P.).

Bolton Woods, 1♂ 1♀, 15/9/34, J.W. (J.F.P.).

L. clypealis Thoms.

Keighley, Holmehouse Wood : 1♀, 9/8/31, 4♀♀, 8/8/35, J.W. (J.F.P.).

Keighley, Marley : 1♀, 13/8/35, J.W. (J.F.P.).

L. variabilis Holmgr.

Shipley Glen : 1♀, 1/8/35, J.W. (J.F.P.).

Meniscus catenator (Panz.).

Keighley, Holmehouse Wood : 1♀, 30/6/34, 1♀, 10/7/34, J.W. (J.F.P.).

Fountains Abbey, Skell Valley : 1♀, 23/6/34, J.W. (J.F.P.).

Thorner, near Leeds : 1♀, -/7/37, W.D.H. (W.D.H.).

Leeds, Blackmoor : 1♀, 14/7/28, J.R.D. (J.F.P.).

Leeds, Roundhay : 1♀, 6/7/38, J.R.D. (J.F.P.).

Lampronota caligata (Grav.).

Crimsworth Dene : 1♀, 10/8/35, J.W. (J.F.P.).

Hovingham : 3♀♀, 3/8/35, J.W. (J.F.P.).

Exetastes cinctipes (Retz.).

Keighley : 1♂, 15/7/34, 1♀, 12/7/35, 2♂♂, 13/7/35, 1♂ 1♀, 14/7/35, 1♂, 17/7/35, 1♂, 18/7/35, 1♀, 19/7/35, 1♀, 3/7/36, 1♀, 10/8/36, 1♀, 14/8/36, J.W. (G.J.K., W.D.H.).

Keighley, Marley : 1♂, 1♀, 25/7/37, J.W. (W.D.H.).

Leeds, Oakwood : 1♀, 30/8/38, 3♀♀, 6/8/39 W.D.H. (W.D.H.).

TRYPHONINÆ

Peltocarus dentatus (F.).

Keighley, Harden Moor : 3♀♀, 9/6/34, J.W. (G.J.K.).

Bassus lætatorius (F.).

Keighley Market : in pea-pods, 1♀, 28/7/34, bred 10/8/34, J.W. (G.J.K.).

B. tetragonus (Thunb.).

Keighley : 4♀♀, 3/10/36, 1♀, 10/10/36, J.W. (W.D.H.).

Keighley, Holmehouse Wood : 1♂, 12/5/35, 1♀, 2/7/35, 1♀, 27/8/35, 1♀, 27/9/36, J.W. (G.J.K., W.D.H.).

Keighley, Marley : 1♀, 16/7/36, 1♀, 4/8/36, J.W. (W.D.H.).

Aberford : 1♀, 27/7/36, J.W. (W.D.H.).

Thorner, near Leeds : 45♂♂, 13/5/39, J.R.D., W.D.H. (W.D.H.).

OPHIONINÆ

Ophion luteus (L.).

Goathland : larvæ, -/8/37, bred 20/6/38, 2♂, H. Walker (J.R.D.).

BIRDS, MAMMALS, AND FISHES OF EASTON AREA OF N.E. CUMBERLAND

T. F. MARRINER

INTRODUCTION

THE complaint has often been made that while our students of Natural History show keenness in exploiting areas abroad, there are too few who will take up the intensive study of their own parish or area where possibly there is plenty to do, especially if, as is often the case, that particular spot has been neglected. I came to settle in Easton on my retirement and found an area unknown to the naturalist because somewhat inaccessible. There may be little, or even nothing, new in the area, but every little helps towards our knowledge of our homeland's natural history, and to our knowledge of the distribution of our flora and fauna. The comprehensive survey of even a small area is the work of many years and is never complete, yet one's efforts will form a basis upon which future workers can build. In the few years I have been here many of the roads have been widened and become tar macadamed highways, and whereas it was common to meet with ground insects on the roads such a thing is now rare. There has also been a big increase in motor traffic, and oil and petrol have annihilated not a few good plant sites on the road verges, much of the one-time arable land has become pasture, fine old hedges, the nesting homes of many birds, have been cut down, and, in some places, given way to metal paling; not a few of the woods have or are being cut down. All these changes have their effect on plant, animal and insect life and there are now few parts of the area where changes have not been made. We have, as yet, no telegraph and telephone wires nor any motor bus services, but these will doubtless come in time. The present motor traffic is responsible for the fact that the roads are often strewn with the corpses of rabbits, etc., killed at night and left to serve as food for crows, gulls, rats and carrion beetles. All this means that my lists, though they represent the life of the area as it has been and now is, will probably in but a few years become rather historical than existing facts.

THE BIRDS OF EASTON

NESTING SPECIES

THE CARRION CROW (*Corvus corone* L.).—A common nesting species throughout the area. This is sometimes spoken of as 'the highwayman of the lesser bird world.' I have known a pair empty every nest in a long road-side hedge of eggs and young in an afternoon, and a friend near here once took me

to see an egg collection at the edge of a wood. There must have been the remains of two or three hundred eggs ranging in size from pheasant, partridge and sparrow hawk to willow wren, quite an epitome of the bird life of the neighbourhood. Some of the eggs were almost whole, one set of sparrow hawk in particular were almost perfect enough for the collector's cabinet. The crow often steals the first brood of the waterhen, laid before the reeds have grown sufficiently to hide them. The carrion crow is most noticeable in March and with all his faults there is something grand about him. He is certainly no slacker. No matter how early you may venture out, he is in the fields before you. As a writer in the *Glasgow Herald* says: 'He is the field labourer among the birds, is homely in his manners, and is possessed of a crude form of humour.'

The bird does most mischief at nesting time when young pheasants, young partridges and the chicks and ducklings of the poultry yard are about. But this bad time of his can only come once a year and in return he does good by devouring carrion which, if left, would taint the air and might cause pestilence.

Dr. Heysham says the carrion crow 'is more numerous in our north country than in any other part of the world.'

I one day came upon a farmer friend sitting under a hedge with his gun by his side. Close by, but hidden by the hedge, was a lone pine tree, and my friend was waiting for a pair of crows which had a nest there. He told me that the site was occupied every year and that he left the birds in peace unless they interfered with his poultry. That morning one of the birds had been seen to steal a duckling, so they had to go. Each season the farmer allowed the crows to build and lay, then about hatching time when they began to invade his farmyard he shot them and was troubled no more that year, but so eligible a site was sure to be occupied by another pair. The farmer had found out in his case, and it is probably true in others, that when a pair of the crows have settled on a nesting site they proceeded to drive other crows out of their area, as other species of birds as robin, dipper, etc., are known to do, so that by the time they have laid and are incubating, they have the area to themselves and if then killed off the place is clear for the season as other pairs have taken up their own territory by then.

THE ROOK (*Corvus frugilegus* Linn.).—This is one of the most commonly seen birds of the area all the year round and flocks pass my window daily coming and going to and from feeding grounds to roosts. There are some six rookeries in the neighbourhood. In 1936 the nests were distributed as follows: Netherby 25, Penton 31, Kirklington 21 and 14, Bewcastle 18, Birch Timber Hill 15, Riddings 7. The last

named is a new settlement. In only three out of the seven is any shooting regularly done.

Pied varieties have been noticed occasionally and a beautiful chocolate specimen from the area was shot just over the Border, which is now in the Hancock Museum, at Newcastle.

JACKDAW (*Corvus monedula* Vieill.).—At one time this was a common nesting bird about the houses and farms of the area. When I came to Easton and workmen were brought to repair the roof, a number of old nests were found on the rafters. The birds had entered through a hole at the eaves. The starlings made use of this hole until it was built up and now nest in the ivy with the sparrows. There are one or two disused barn ruins in the fields to which jackdaws still resort, but they no longer nest around houses. However, after some years of decreasing they are now becoming more plentiful and may resort to old practice. Their chief local stronghold is the Penton cliffs where they have been from time immemorial. A pure white specimen from one of the nests there was a great attraction in 1937. I saw the bird but never heard what became of it, though I know attempts were made to catch or shoot it.

MAGPIE (*Pica pica* L.).—This was at one time a plentiful nesting species in the area, but is now very rarely seen. There is one wood, however, where it nests every year and another where I have seen it but have not come across the nest. The Brackenhill keeper tells me that there are three or four nests in their woods every year.

JAY (*Garrulus glandarius* Lin.).—This nests yearly at Brackenhill. The numbers are kept in check by the keeper.

STARLING (*Sternus vulgaris* L.).—This species has increased rapidly of late years. It breeds in every available spot and huge flocks, increased by winter visitors, are a frequent sight in the winter months. A pair built under my roof until their entrance hole was stopped up, when they took to the ivy on the front wall. One of the young birds of last year had a perfect ring of white round the neck and, while writing, March, 1939, a pair can be seen from the window making preparations, the hen bird has a white line under each eye. This is probably the greatest pest and rascal of our native birds.

GREENFINCH (*Chloris chloris* L.).—A common resident in the area. Not far from my house there is a colony breeding in the tall hedge of a farm lane, every year.

HAWFINCH (*Coccothraustes coccothraustes* L.).—This should probably not be included here as a regular nesting species, as I have not seen a nest here, but the first recorded nesting of the species in Cumberland was in the area when two nests, one with three young and one with two forsaken eggs, were

found in the orchard at Netherby on July 21st, 1907, as recorded in the *Transactions of the Carlisle Natural History Society*, Vol. 3, p. 7. I saw one bird on the hedge of the Carlisle road just outside Easton area on July 18th, 1938. The bird has increased in the county of late years and seems to be spreading northward from the Lake District and also westward from the Tyne area.

GOLDFINCH (*Carduelis carduelis* Hartert.).—This has increased rapidly in the area lately and now nests are found in almost every orchard and large flocks occur in the winter months. The bird is extremely popular as a cage and aviary bird and is easy to breed.

HOUSE SPARROW (*Passer domesticus* L.).—A common resident, though not so numerous as in the days when horse traffic was more frequent. It does not yet seem to be properly realised what a good friend the sparrow is to agriculture.

CHAFFINCH (*Fringilla calebo* L.).—This is considered by many to be our most beautiful native bird. It is probably the commonest bird of the Easton area. Besides our resident birds, some of which leave in the winter, we get numbers of migrants about November and again in March. I have trapped some of these for aviary breeding. The cocks are much bigger and bolder looking than our native birds, though the hens appear to be much the same as our own.

LINNET (*Acanthus cannabina* L.).—Quite a common breeding species especially in the lower western portion of the area. We get flocks of visitants in the winter months, though they seem after a few days stay to pass on to the lower ground, passing again on their return in spring.

LESSER REDPOLL (*Acanthus linaria* Müll.).—A common resident. About three hundred yards from my gate there was a fine, tall, old hedge which in 1935, 1936 and, I understand, for many years before, contained a number of nests of this species. This hedge was cut down in 1937 by order of the Authorities to improve (?) the road as motor traffic had so increased in the area. A pair of these birds have bred in one of my avaries.

TWITE (*Acanthis flavirostris* L.).—One or more pairs nest on a piece of rough ground not far from my house, each year, but the bird is rare in the area.

BULLFINCH (*Pyrrhula pileata* Macgillivray).—This has increased numerically lately and is now a fairly common nesting species. This last winter, 1938-39, is the only one since I came here when the bird has not been seen about the garden and aviary field.

CORN BUNTING (*Emberiza calandria* L.).—After being absent for some years the corn bunting returned and nested in the area in 1938 and has again come this year, 1939. Possibly

it left the area because much of the arable land was given over to pasture. The farm where it has reappeared is one where there are a number of arable fields.

YELLOW BUNTING or YELLOW HAMMER (*Emberiza citrinella* L.).—One of the commonest residents of the area and many stay throughout the winter in the area. This makes an interesting aviary bird but it is not a long living bird. About three and a half years seems its usual span of life. It will pair with the reed bunting and has been known to do so in the wild.

REED BUNTING (*Emberiza schaniclus* L.).—I have had nests of this under observation each year since I came to Easton, but it is not exactly common. It moves to the lower areas during winter, leaving in October and returning in March. The country folk around call it the 'blackcap.'

SKYLARK (*Alauda arvensis* L.).—Nests commonly throughout the area. A younger one with pure white wings came from a nest in the field at the back of my house in 1937.

PIED WAGTAIL (*Motacilla yarrelli* Gould).—Not common. The only nest I have actually seen was near Shanks Castle on the Lyne in 1936, though others have been reported to me. I have seen odd pairs of the birds in winter.

GREY WAGTAIL (*Motacilla cinerea* Tunstall).—This nests fairly commonly along the burns of the higher area.

TREE PIPIT (*Anthus trivialis* L.).—This nests each year on and about my hen-run, some four acres of waste ground from which a wood was cut down in war-time.

MEADOW PIPIT (*Anthus pratensis* L.).—Nests commonly on my hen-run and is common on suitable places all through the area.

TREE CREEPER (*Certhia familiaris* Ridgway).—This I have found rare in the area. A nest with three eggs and the two birds who owned it are all I have seen here except the somewhat doubtful identification of one seen with a number of blue tits in the Yadhill Wood in November, 1937 and a nest which was reported to me in June, 1937, which I had no opportunity of confirming.

THE TIT FAMILY.—The tits have always been favourites of mine both in the field and in the aviary. I have kept the great tit, cole tit, blue tit and long-tailed tit at various times, though I have never induced any to breed successfully in captivity. As a rule they are not very long lived birds either in freedom or in captivity. Three and a half to four years seems, in my experience, to be their span. Bird keepers hold that it is never safe to keep any tit either with another tit or with other species of birds of small size, and this is pretty correct. Even pairs will not, as a rule, live peaceably together for long in a small space. I had a blue tit which came to me

a few months old and it lived for over three years in a large aviary where there was a mixed collection of British birds. It had a small tit nest box with a hole too small to admit any of the other species and to this it could retire when, like a famous film star, it wished to be alone. Tommy, as the bird was called, gave many an hour's amusement to visitors by his antics and, like an old soldier, he did not die, but simply faded away. He was missing from the aviary one day and was never seen again, not even any trace was found when the aviary was taken to pieces for removal. My first great tit came into a shed where I was working and helped himself to some sunflower seeds which lay about the floor. He returned each day and I fitted up a cage for him. He took possession and though cage door and shed door were kept open during the day, he did not leave and was joined by another. I made a small cork-bark lined aviary for them with a nest box which had a hole into the aviary and another to the outside. Into this the tits were put and after a couple of days the road in and out at the back was left open so that they could come and go at will. The two stayed in and about the aviary all the winter and left in March. They nested on a Nature Reserve about a mile away. I found the nest and knew it belonged to the pair by the behaviour of the cock when I whistled. They returned to my garden in October and another two which I gave to a friend who was interested in them. The gentleman ringed them and put them in a very large aviary. One was killed by a cat and a fortnight later he sent word that the other had escaped. It turned up at my shed next day. We knew it by the ring. The hen of my original pair died that winter and the cock left in spring. Before another winter came I had moved to Easton.

GREAT TIT (*Parus major* L.).—Seems scarce here. I had only seen two birds in winter until 1937, when I found a nest about a hundred yards from the house.

COLE TIT (*Parus ater* L.).—A rare resident here and in the lower western portion only.

BLUE TIT (*Parus caeruleus* L.).—This is by far the commonest tit here both in summer and winter. Most of our tits appear to leave for the lower ground of the Cumberland plain in winter, though a sprinkling of the blue tits seems always to remain about the scattered homesteads and gardens.

SPOTTED FLYCATCHER (*Muscicapa grisola* L.).—I have seen more than one nest of this, though it is not a common bird here. Whether by accident or designed choice I do not know, but the last four nests I have seen all had the opening to the south-west and the holes were thus sheltered from the prevalent westerly winds and from our coldest wind, the northerly.

THE WHITETHROAT (*Sylvia communis* Lath.).—A summer

visitor, arriving in April and leaving late in August. Breeds freely throughout the area except in the highest parts.

LESSER WHITETHROAT (*Sylvia curruca* L.).—Not so widely distributed as the last and does not seem to return to the same nesting place each year. From what I can gather it has only come into the area within recent years. I have no date earlier than May for its arrival and it leaves before the end of September.

GARDEN WARBLER (*Sylvia salicaria* L.).—This summer visitor only nests very sparingly in the area. There were nests on my hen-run in 1936 and I often heard and watched the birds.

BLACKCAP (*Sylvia atricapilla* L.).—One or two nests have been reported to me and once when motoring I saw two of the birds during the nesting season near the place, but I have not myself seen a nest.

SEDGE WARBLER (*Acrocephalus schanobaenus* L.).—I have seen and heard this, our northern nightingale, on several occasions and found one nest with young, all in the lower part of the area. A young one picked up on the road side fully feathered was brought to me, but I did not succeed in rearing it.

WILLOW WARBLER (*Phylloscopus trochilus* L.).—This is by far the commonest warbler of the area. Its average date of arrival here is April 14th.

CHIFFCHAFF (*Phylloscopus collybita* Vicill.).—A regular summer visitor but never numerous.

MISTLE THRUSH (*Turdus viscivorus* L.).—A common resident, but leaves the area in some winters.

SONG THRUSH (*Turdus musicus* Hartert.).—Very common nesting species here, but is absent from the area from November to late February. A pure white specimen was got from a nest here in 1937 and became a great family pet.

BLACKBIRD (*Turdus merula* L.).—One of the commonest nesting species here.

RING OUZEL (*Turdus torquatus* L.).—Nests in the higher east of the area, but not in any great number. Generally arrives late in April and leaves in September.

REDBREAST (*Erithacus rubecula* Hartert.).—Common throughout the area. The continental redbreast is occasionally seen in winter.

STONECHAT (*Saxicola torquata* Hartert.).—Nests here very sparingly. Some birds stay with us through the winter.

WHINCHAT (*Saxicola rubetra* L.).—This summer visitor is commoner than the last named though rather scarce in some years.

WHEATEAR (*Oenanthe aenanthe* L.).—The wheatear is seen in numbers on our higher areas in March and again in August or September, but most of these are passage birds and it

only nests here very sparingly, though it does so commonly further south on the coast sandhills.

HEDGE SPARROW (*Prunella modularis* L.).—Common nesting bird all over the area.

DIPPER (*Cinclus cinclus* Lath.).—Almost every local stream here has its pair.

WREN (*Troglodytes troglodytes* L.).—Common resident. In the winter of 1937 one came into my greenhouse where I was busy. I closed the door when I left. It stayed two days and cleared the place of spiders, etc. I let it out and it remained about all the winter.

SWALLOW (*Hirundo rustica* L.).—Common summer visitant, though perhaps not so numerous as the next.

HOUSE MARTIN (*Delichon urbica* L.).—Very common summer visitant here. Almost every building in the area has its number of nests. A pair have nested in a small coal shed here each year since I came, in spite of ceaseless traffic in and near it. Often as far as fifty youngsters are to be seen in a row on my wireless aerial wire and we often watch the parents feeding them.

SAND MARTIN (*Riparia riparia* L.).—Every suitable nesting site in the area is occupied in each season.

GREAT SPOTTED WOODPECKER (*Dryobates major* Hartert.).—This has nested from time immemorial in the Netherby Woods and within the last ten years nests have been found each year in the woods at Brackenhill.

CUCKOO (*Cuculus canoriis* L.).—Easton gets its quota of cuckoos every season, though the number varies. 1936 was the best year I have known and 1938 the poorest.

SWIFT (*Micropus apus* L.).—Numbers are to be seen each year and there are a number of derelict barns and other buildings where nests are to be found yearly.

NIGHTJAR (*Caprimulgus europæus* L.).—I have only come across one nesting site in the area on the edge of Brackenhill Woods. The bird has been known to nest here for many years.

KINGFISHER (*Alcedo atthis* L.).—This nests on some of the Lyne tributaries, but it is a rare bird here.

BARN OWL (*Flammea alba* Scop.).—Nests regularly in several places here, but is not so common now as it is said to have been formerly.

LONG-EARED OWL (*Asio otis* L.).—This nests in Bewcastle area and at Brackenhill. I used to keep a pair of little owls in a small aviary and I have seen a long-eared owl sit on the top of a wooden arch near for a full hour just at dusk, and its silhouette, viewed from a house window again the western sky, had a very picturesque effect. This was on May 15th, 1936, and I suspected a pair breeding in Yadhill Wood that summer but found no nest.

(To be continued)

THE VEGETATION OF YORKSHIRE AND SUPPLEMENT TO THE FLORAS OF THE COUNTY

(Continued from page 88)

Festuca pratensis Huds.

F. sylvatica Vill.

Additional stations : Holwick in Teesdale ! ; Dent, W.A.S., 1932 ; Birk Gill, Colsterdale, J.F.P., 1902 ; near Tanfield, J. Dickin ; Hackfall, T. J. Foggitt.

F. heterophylla Lam.

Under suspicion of being a sown species ; I have gathered it in two places under trees by the drives in Harewood Park.

F. rubra L. (Agg.).

The varieties *genuina* Hack., *grandiflora* Hack., *glaucescens* Heg. and Heer., *dumetorum* How. (*barbata* [Hack.]), *planifolia* Hack., *arenaria* (Osb.) Fr., and *junceae* Hack., have all been found on the Redcar-Saltburn dunes. Mr. R. Good records (*fid*i W. O. Howarth) the following varieties from the Kilnsea Warren-Spurn Head area :- *genuina* Hack., *grandiflora* Hack., *glaucescens* Heg. and Heer., and *dumetorum* How. (*barbata* [Hack.]).

F. ovina L.

F. capillata Lam.

Pilmoor and Austwick Moss, W.A.S., 1932. Doubtless in other similar habitats.

F. bromoides L. (*sciuiroides* Roth.).

An East Riding record is Allerthorpe Common, W.A.S. ; sandy ground near Bessacar Grange, Rossington, H. E. Craven.

F. Myurus L.

A common alien.

Bromus sterilis L.

B. ramosus Huds. (*asper* Murr.).

B. erectus Huds.

B. inermis Leysser., *B. (Ceratochloa) Unioloides* H.B.K., *B. rigidus* Roth., *B. tectorum* L., *B. rubens* L., *B. scoparius* L., *B. macrostachys* Desf., *B. japonicus* Thunb., and *B. squarrosus* L.

Have all been recorded as aliens.

B. arvensis L. and *secalinus* L.

Are Colonist-Casuals.

B. pratensis Ehrh. (*commutatus* Schrad.).

An East Riding record is Bubwith, W.A.S., 1937.

B. racemosus L.

Bromus hordeaceus L. (*B. mollis* L.).

B. lepidus Holmb. (*britannicus* Williams).

Thirsk, J.G.B. (*Herb. Mus. Brit.*); Field by Topcliffe Station, June 25th, 1936, Miss G. M. Rob and W.A.S.

Brachypodium sylvaticum (Huds.) R. and S.

B. pinnatum (L.) Beauv.

Lolium perenne L.

L. temulentum L.

Alien.

Agropyron (Triticum) junceum Beauv.

Not in West Riding Flora.

A. repens L.

A. caninum Beauv.

A. cristatum J. Gaertn., *A. patulum* Trin. (*squarrosus* Link.), *Triticum monococcum* L., *T. ovatum* (L.) Rasp., and *T. cylindricum* (Host.) Ces. Pass. and Gib.

Are seen occasionally as aliens.

Pholiurus (Lepturus) filiformis (Roth.) Schinz and Thellung.

P. incurvus (L.) Schinz and Thellung, var. *pycnanthus* (Hackel).

Grew strongly in 1907-8 at Exley's skin-yard, Meanwood.

Nardus stricta L.

Hordeum nodosum L. (*pratense* Huds.).

H. murinum L.

H. marinum Huds. (*maritimum* With.).

Has occurred as a casual occasionally in Calderdale.

Elymus europæus L. (*Hordeum sylvaticum* Huds.).

No record for any part of the East Riding. Some additional localities are: Bardsey, J.F.P. ! Holden Gill, Silsden, 1890, H. T. Soppitt and J. Eastwood, Hb. J. Beauland ! and *Nat.*, December, 1895; Sun Wood, Shelf, 1899, A. Illingworth.

E. arenarius L.

Not in West Riding Flora.

GYMNOSPERMAE

PINACEAE

Juniperus communis L.

Not in East Riding Flora.

Additional records are: Nidderdale in Lulbeck, J. Lucas (*Studies*, 125); in a side gill off Whitendale, J.F.P.; two or

three big bushes on the 'Till' bank near Askrigg Station; Head of Coverdale, C.A.C. The Moughton Fell area has altered in position since 1890; it has gone altogether from the north-west corner, *i.e.* on Long Scar, where it was then abundant and now it is dying off quickly on the next area on Thieves Moss, C.A.C.

var. *intermedia* Nyman. Having examined abundant material, collected J.F.P., 1901, from the north end of Moughton I must allocate it to *intermedia*. The Rev. H. J. Riddelsdale, in *Nat.*, 1900, first pointed out how, in his opinion, the Juniper here approached *J. nana* in character.

Taxus baccata L.

Pinus sylvestris L.

Larix decidua Mill (*europæa* DC.), *Abies excelsa* DC., *A. pectinata* DC., and *Cedrus Libanum* L.

Are planted aliens.

PTERIDOPHYTA

EQUISETACEÆ

Equisetum maximum Lam.

E. arvense L.

E. pratense Ehrh.

Only in North Riding.

E. sylvaticum L.

Not in East Riding Flora. The var. *capillare* Hoffm. is frequent.

E. limosum L.

E. palustre L.

The var. or form *polystachyum* Weig., was gathered at Ringing Keld Bog, near Cloughton, Scarborough by C.W., July, 1903.

E. hiemale L.

Not given in East Riding Flora, but I have had it from Bubwith, Geo. Roberts, spn., *circa* 1887, and higher up at Hazelbush, Strensall (J.G.B.) it certainly has grown.

Other additional records are: South bank of Nidd a little higher up than Bilton Hall, J. W. Addyman, 1896!; Buttercliffe, Keighley, L.R's Skipton and District List (1900); sparingly by the river about a mile below Shipley, W. West; Sun Woods, Shelf, F. Murgatroyd.

E. variegatum Schleich.

Not in East Riding Flora. Malham Moor, W.A.S. (*Nat.*, 232, 1936); Kisdon Force, Keld, Swaledale; Y.N.U. Excursion 1937.

FILICES

POLYPODIACEÆ

Cryptogramma crispa Br. (*Allosorus*).

Not in East Riding Flora. Some notes on alterations in distribution at the present time are to be found in the *Naturalist*, 1937, p. 34.

Pteridium aquilinum (L.) Kuhn.

Blechnum Spicant (L.) With.

Phyllitis Scolopendrium (L.) Newm.

Asplenium marinum L.

Only in North Riding Flora.

A. Trichomanes L.

A. viride Huds.

Not in East Riding Flora.

A. lanceolatum Huds.

No other locality than the West Riding one at Agden reservoir.

A. Adiantum-nigrum L.

W. West, in *Nat.*, 1888, p. 302, gives a new locality between Sedburgh and Cautley. On p. 305 the station mentioned on the Ingleton-Kirby Lonsdale road is at Masongill and is about half a mile from the Lancashire border; it is very plentiful at this place, C.A.C. In the Hodder area, J.F.P. gives Grindleton side of Newton Fell, and Miss Peel says 'on a sand wall at the back of Browsholme Hall.'

A. Ruta-muraria L.

A. septentrionale (L.) G. F. Hoffm.

Now presumably extinct; no one living has seen it on Ingleborough, although specimens exist in herbaria!—not, however, definitely localised, as one could wish were the case.

Athyrium Filix-fœmina (L.) Roth.

Lastrea Filix-mas (L.) Presl.

L. cristata (L.) Presl.

Last seen at Askham Bog in 1893. G. C. Druce notes a splendid display of this in Woodsome Woods, *Nat.*, 1911, p. 322. [But was not some other species intended? W.A.S.]

L. spinulosa Presl.

In Lune drainage it is plentiful on Lawkland and Austwick Mosses, C.A.C.

***Lastrea dilatata* Presl.**

***L. æmula* (Kuntze) Brack.**

Not given in East Riding Flora. For recent confirmation of the Forge Valley record see *N.W. Nat.*, September, 1939, p. 189. Mulgrave Woods, F. A. Lees, 1882. Harden Woods, H. Ibbetson, 1863.

***L. rigida* Presl.**

Only given in West Riding Flora. A new station is in Barbondale higher up than Shortgill Bridge, 1939, C.A.C.

***L. Oreopteris* Presl.**

***L. Thelypteris* (L.) Bory.**

An additional station is Kelleythorpe Marsh, south-west of Great Driffeld, 1904, Rev. Dr. Wood (Bainton). Still plentiful there, Y.N.U. Excursion, 1939.

***Polystichum angulare* Presl.**

Not apparently a species of the East Riding at all, and in my experience rare in the north. According to L.R. (Flo. Skipton), in Halton Eastgill and near Burley-in-Wharfedale, but no spn. seen ! Also Ingleborough towards Chapel-le-dale (L.R., *Nat.*, 1903). Difficult not to doubt as it does not like limestone.

***P. aculeatum* Roth. incl. *lobatum* Swartz.**

***P. Lonchitis* (L.) Roth.**

Not in East Riding or North Riding Floras. Still on Attermire and Moughton Fell, the gardens in Austwick, etc., show that this fern has long been diligently sought out by collectors, C.A.C.

***Cystopteris fragilis* (L.) Bernh.**

***Polypodium vulgare* L.**

***Phegopteris polypodioides* (L.) Fée.**

Not in East Riding Flora.

***P. Dryopteris* (L.) Fée.**

***P. Robertiana* A. Braun (*calcareum* Sm.).**

Not in East Riding Flora.

***Ceterach officinarum* DC.**

Some new localities are : Old wall nigh Kilgrim Bridge, 1906 ! and a tuft on a wall at Croft ; Limestone walls, Browsholme Hall, J.F.P. ; Gargrave, H. M. Foster ; Dentdale, C.A.C. ; Halsteads, Ingleton, W. K. Mattinson. Still on Awes Scar, Malham Moor.

HYMENOPHYLLACEÆ

Trichomanes radicans Swartz.

Long gone from its first found site and adventive if not deliberately introduced in its Scamonden locality. There is no reason for doubting that this species might develop in yet some other cache amid some humid sheltered ravine open to the west. There are many suitable sites between Dunford Bridge and Boulsworth Hill, Whelpstone Crag, and Embsay Edge.

Hymenophyllum tunbrigense (L.) Sm.

I have never been able to see a specimen reputedly from L.R.M. or C. river basins; yet nobody doubts that it did occur near Harrogate and Birstwith in Nidd drainage, and Peterkin's record from Hayburn Wyke, vouched for by Dr. Richard Spruce, forbids one to doubt its occurrence in Yorkshire.

H. peltatum Desv. (*unilaterale* Bory.).

Not in East Riding Flora. Further localities are: By cascade 2 miles below Dent, J. Handley; several places in the Ingleton ghylls, C.A.C.

OPHIOGLOSSACEÆ

Botrychium Lunaria (L.) Sw.**Ophioglossum vulgatum** L.

OSMUNDACEÆ

Osmunda regalis L.

Gone from many of the old localities and no new records to hand.

LYCOPODIACEÆ

Lycopodium alpinum L.

Not in East Riding Flora.

L. annotinum L.

The only station for this is at Buttercrambe Woods, Stamford Bridge, B. B. Le Tall, 21st May, 1890, *Journ. Bot.*, 218, 1892. Still there in 1936.

L. clavatum L.

Some additional localities are: Goathland, 1909-10!; Grindleton quarry, near Whitendale, Bowland, J.F.P.; very fine in gravel pit alongside Doncaster-Finningley rails near Bessacar Grange, 1909, H.E.C.!

***Lycopodium inundatum* L.**

The East Riding Flora note from *Wats. Top. Bot.* was on the authority of O. A. Moore, who marked a London catalogue for H. C. Watson for the East Riding Vice-County without appending localities. I have an impression that Watson told me it was near Langwith Moor, but Watson had not seen it nor received a voucher specimen.

***L. Selago* L.**

Not in East Riding Flora. Other stations are Grassington Moor and Arncliffe Clouders, J.F.P.

SELAGINELLACEÆ

***Selaginella selaginoides* (L.) Link.**

An additional station is on Blackstone Edge 'about a mile before the White House,' 1895, C. Fielding and C. E. Moss.

MARSILIACEÆ

***Pilularia globulifera* L.**

ISOETACEÆ

***Isoetes lacustris* L.**

Riccall Common is the only Yorkshire locality where this has been found.

CHARACEÆ

***Nitella flexilis* Ag.**

Not noted in North Riding Flora. Some further records are: Near the junction of the Wiske and Swale, Topcliffe, 1906 !; pond at Spring Wood, West Vale, and Bower's mill-dam, Blackburn Valley, 1904, W. B. Crump, spns !

***N. opaca* Ag.**

Not noted in North Riding Flora and no East Riding record, but I saw it in a roadside pool at Baythorpe, east of Butterwick, in 1909 !; north bank at Aysgarth Upper Fall, 1884-5 !; in Bishopdale (J. Percival); lake at Cannon Hall Park, Y.N.U. Excursion, 1909.

***N. translucens* Ag.**

Not noted in North Riding Flora. Skipwith Common, C.W., 1903.

***T. glomerata* Leonh.**

Not noted in North Riding Flora. An additional record is stream from Malham Tarn at the sinking place, 1890, Jas. Groves (W. Whitwell, MS. in litt.). Pools by R. Humber, C.W., *fidi* A. Bennett, April, 1909. Brackish ditch, Kilnsea, near Spurn, W.A.S., 1937, *Nat.*, 1938, 47.

Tolypella intricata Leonh.

Deep Ditch, Willerby Lane, nr. Cottingham, C.W. 1905.

Chara vulgaris L.

Not noted in North Riding Flora.

The *papillate* var. or state is upon record for Riccall (Dr. Parsons) and the *longibracteate* form for Coxley Dam (P.F.L.), the Aire at Uttley (L.R. in Flo. Skipton 46), and Allerthorpe Common, W.A.S. spn.

C. contraria Kuetz.

Not noted in North Riding Flora, nor East Riding Flora. Some other records are: Malham Tarn, 1911, C.E.S. MS.; Aysgarth (with *C. aspera*) on Yore bank, J. Percival! teste A. Bennett, circa 1885.

C. hispida L.

Not noted in North Riding Flora. Additional records are: Market Weighton, C.W.; in Locker Tarn above Carperby, J.P. !; Harewood Park lake, 1908 !; Queen Mary's Dub, Ripon, Y.N.U. Excursion, 1939.

C. aculeolata Kuetz.

Not noted in North Riding Flora. Pond, Byram Park, September, 1933, W.A.S.

C. aspera Willd.

Not noted in North Riding Flora nor the East Riding Flora. Some recent records, however, are from these areas: where a spring breaks out of the chalk above Shirburn on the north-facing wold slope; by a calcareous 'petrifying' rill on the north bank below Aysgarth bridge! J. Percival.

C. fragilis Desv.

Not noted in North Riding Flora, but in the river $\frac{1}{4}$ mile below Hawes Bridge! Bear Park, Carperby! J. Percival.

The var. *Hedwigii* Kütz is recorded from R. Aire at Uttley, Keighley (L.R.), var. *fulcrata* Gaut. for Sandal (P.F.L.), while the state *delicatula* Ag., is not uncommon. I believe I have a note of it for Malham Tarn, C. E. Salmon, 1911. Yes, the *C. fragilis* of Lees' *Flora* at Malham Tarn is *C. delicatula*, W.A.S.

[All records of *C. fragilis* require revision; doubtless the majority refer to *C. delicatula* Ag. W.A.S.]

NEWS FROM THE MAGAZINES

The Entomologist for April contains 'A new Aberration of *Tephrosia consonaria* Hubner. (Lep. Geometridæ),' by A. Richardson (with plate); 'British Gall causing Cynipidæ, III,' by M. Niblett; 'Winter Riviera Butterflies, 1938-39,' by Lt.-Col. N. Eliot; 'British Lepidoptera Collecting, 1939,' by C. G. M. de Worms; and numerous notes and observations.

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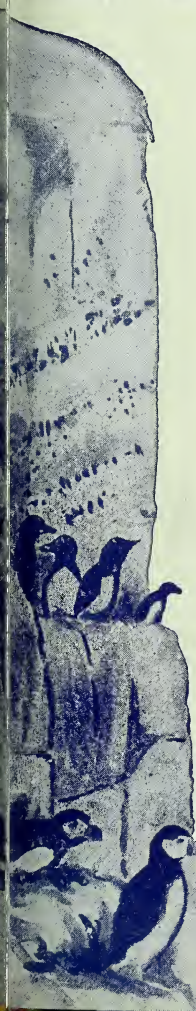
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BALAENA MYSTICETUS—THE GREENLAND, ARCTIC OR BOW-HEAD WHALE

R. W. GRAY

THIS is supposed to be the whale which was killed in the seventeenth century at Spitsbergen, then known as 'Greenland'—hence the term 'Greenland' Whale.

It is a remarkable cetacean: it has a wonderful feeding apparatus, possesses very distinct rudiments of hind-limbs, and it produces and rears its young in high latitudes.

SIZE

According to my father, the males usually reach a length of 52 or 53 ft., the females being considerably larger. He says:

'Female whales have often been killed of from 55 to 57 ft. in length, their "bone" ranging from 11 to 14 ft. long and their other proportions being equally large.

'Individuals have been taken in the Greenland Sea yielding 28 to 30 tons of oil, with 30 cwts. of whale-bone. I (myself) have never taken a female whale that yielded more than 25 tons of oil and 25 cwts. of whale-bone.'¹

In 1857, as my father doubtless knew, the Peterhead ship *Intrepid* caught a whale which (if the contemporary Peterhead newspaper is to be trusted) yielded 1 ton, 11 cwts., 1 qr., 4 lbs. of whale-bone. Its longest whale-bone measured 12 ft. 10 in.

THE INTEGUMENTS

These are similar to those of the Narwhal, but the epidermis and *pars reticulata* or blubber are both very much thicker.

In the calf about the time it is weaned, according to Scoresby, both are unusually thick, the blubber for an obvious reason, the epidermis perhaps because 'ballast' is needed until the whale-bone grows to the length of a few feet. Referring to one which he killed in 1821, Scoresby says:

'This whale, though a "sucker," was 19 ft. in length, and 14 ft. 5 in. in circumference at the thickest part of the body. The external skin consisting of cuticle and rete mucosum, was 1 $\frac{3}{4}$ in. thick, being twice the thickness of the same membranes in a full-grown animal. The blubber, on an average, was 5 in. in thickness. The largest whale-bone measured only 12 in., about one-half of which was embedded in the gum. The external part of these fringes, not exceeding 6 in. in length, did not seem sufficient to enable the little

¹ 'Notes on the Habits of the Greenland Whale,' Part III, *Scottish Fishery Board's Third Annual Report*, p. 365.

whale yet to catch by filtration out of the sea the shrimps and other insects on which the animal in a more advanced stage is dependent for nourishment ; maternal assistance and protection appeared, therefore, to have been essential for its support.' ¹

FEEDING

B. mysticetus is, of course, a plankton feeder, subsisting it is supposed mainly on the *Clanus finmarchicus*, a Copepod very abundant in the Arctic seas, especially where the water, owing to the presence of diatoms, is more or less green in colour.

The animal's mouth acts like a bag-net ; when feeding it forces its way through the water with its large mouth open : hence its large and powerful tail and the strong ' water ' or eddy that breaks out behind it. My father gives the following account of their behaviour when feeding :

' When the food is near the surface, they usually choose a space between two pieces of ice from 300 to 400 yards apart, which whalers term their beat, and swim backwards and forwards until they are satisfied or the food exhausted. They often go with the point of their nose so near the surface that the water can be seen running over it just as it does over a stone in a shallow stream ; they turn round before coming to the surface to blow, and lie for a short time to swallow the food before going away for another mouthful. They often continue feeding in this way for hours, on and off, afterwards disappearing under the nearest floe, sleeping probably under the ice, and coming out again when ready for another feed. In no other way can their sudden reappearance at the same place be accounted for.

' Very often the food lies from 10 to 15 fathoms below the surface of the water. In this case the whales' movements are quite different. After feeding they come to the surface and lie still for a minute. One can easily see the effort they make when swallowing. They can raise their heads partly out of the water, and dive down again, throwing their tails up in the air every time they disappear. Their course below water can often be traced from their eddy. This is caused by the movements of the tail, which has the effect of smoothening the water in circles immediately behind them.' ²

BREEDING HABITS

A separation of the species appears to take place in the summer months : the males and some of the females frequenting the waters off Cape Hold-with-Hope and adjacent parts

¹ Scoresby, W., *Journal of a Voyage, etc.*, p. 149.

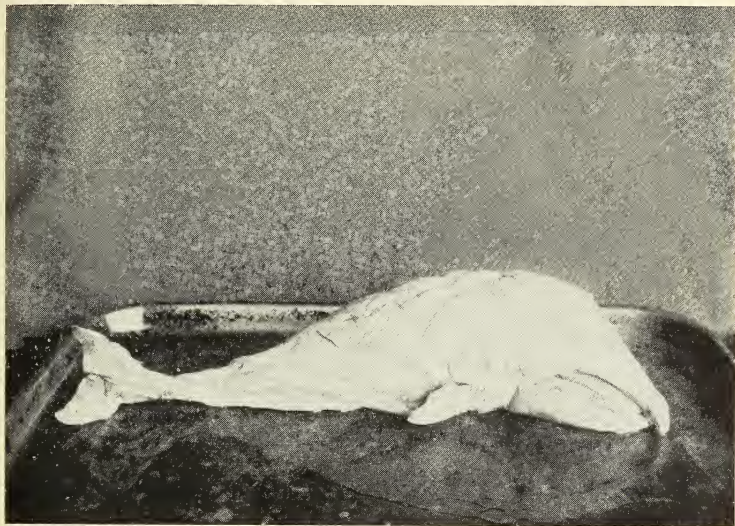
² Gray, D., ' Structure and Habits of Whales,' Buckland's *Notes and Jottings*, p. 331.

of the East Greenland Coast. The others, the breeding females and the immature animals of either sex, preferring situations further north.

Greenland whales appear to produce their single young usually in the vicinity of Northern Spitsbergen.

At one time mothers and calf were a not infrequent sight in the vicinity of Hakluyt's Headland in April and May. In his log-books the senior Scoresby says :¹

'1794. April 28th. Headland at S. by E. distant seven



Fœtus of *B. Mysticetus*. Length 30".

miles. At 4 p.m. J . . . D . . . struck a fish (11½ ft. bone). She had a young one along with her.'

'1797. May 11th. North end of Foreland at E.S.E. At meridian ye mate struck a sucking fish which we let play about for a couple of hours to see if the old one could find it, but we never saw her. *N.B.*—We have seen a vast quantity of fish this (last) two days and most of them old and young ones together.'

'1798. May 27th. In the morning watch saw several fish, most of them old ones with their young ones and had all hands in pursuit of them and was, I understand, three times fast to suckers, but the blubber being so tender that only one of the harpoons held. . . . The mother trifled about for some time but we could not come near her. At 10 a.m. made

¹ Log-books of W. Scoresby, Sen., published in 1916 in facsimile by the Traveller's Club of New York.

the ship fast (to a piece of ice) and hoyst the young fish on deck.'

A whale accompanied by a calf became a very rare sight in the Greenland Sea, partly because the animals were becoming scarce and partly because the whalers were later in going north to look for them. In this connection my father says:

'There is a great deal still to be found out as to where the old cow whales disappear to after calving, for after forty years' whaling experience in the Greenland Seas I have not seen more than a dozen whales accompanied by calves altogether. That they often have calves is proved beyond a doubt by the number of young whales frequently to be seen (in lat. 80° in May).'¹

There is a fœtus of a Greenland whale in the Peterhead Museum. It is 30 in. in length and I believe was brought from Davis Strait by my grandfather many years ago. As it is one of the very few specimens of the kind in existence, I have had it photographed and reproduced herewith.

MIGRATIONS

The migrations of *B. mysticetus* appear to be very similar to those of its small brother, the Narwhal. Although it is true Dr. Nansen saw only Narwhals in very high latitudes, he might have brought back a very different story if he had made his celebrated voyage a hundred years sooner.

Coming apparently from the south-west the whales and narwhals made their appearance in the outskirts of the whaling ice, north of latitude 78° about May 15th, where, of course, many of the whales were at one time killed. Does not Scoresby say: 'The 79^{th} degree, at the distance of twenty or thirty leagues from the coast of Spitsbergen, afforded to the most persevering fishers an abundant harvest for years together.'²

In June or July the whales and narwhals deserted the deep central waters north of about latitude 78° for their summer resorts: the old males and some of the females proceeding to the waters off the East Greenland coast between latitude 70° or 71° and latitude $75\frac{1}{2}^{\circ}$, the others to the waters adjacent to North-east Greenland or to situations still farther north.

North-east Greenland at one time had its Eskimo inhabitants and the heads of their harpoons and lances were sometimes found in whales killed in the northern part of the Greenland Sea. Scoresby mentions one or two instances,³

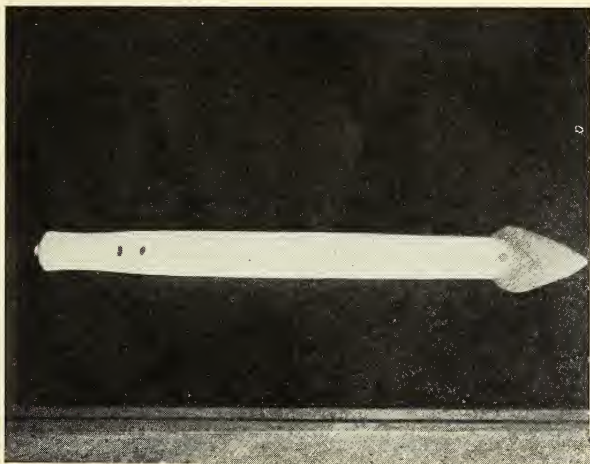
¹ Gray, D., 'Habits of Greenland Whales,' Buckland's *Notes and Jottings*, p. 365.

² Scoresby, W., *Journal of a Voyage, etc.*, p. 64.

³ Scoresby, W., *Arctic Regions*, Vol. I, p. 10.

my father records another which occurred in 1866,¹ and recently I identified one preserved in the Peterhead Museum. It was found in a whale killed in 1813, the ship concerned being the *Union*, Capt. Hutchison. It is a lance-head, is made of bone, is about 8 in. long and is tipped with a piece of slate. As it is a unique specimen of the kind I have had it photographed and reproduced.

There is some doubt about the whereabouts of the whales' and narwhals' winter quarters. My father thought they



1813. Head of a N.E. Greenland Eskimo lance found in a Greenland whale killed in the Greenland Sea in 1813 by the *Union* of Peterhead (Captain Hutchison). Specimen in the Arbothnot Museum, Peterhead.

appeared in the winter between the latitudes of Iceland and Cape Farewell. The animals migrated south along the East Greenland Coast in the autumn and north again in the spring by a somewhat more easterly route, but keeping among the ice and not showing themselves in its outskirts until they reached latitude 78° . These autumnal and vernal migrations appear to be connected with the temperature and upon the formation or dissolution of 'bay' or new ice upon the surfaces of the open spaces.

It would be a mistake, however, to suppose that all the whales migrated as far south as Cape Farewell, or even Iceland, there being some which, at any rate, at one time remained in a high latitude. They were adult animals and they occurred, in open seasons, in latitudes 80° and 76° , in close seasons

¹ Gray, D., 'Habits of Greenland Whales,' Buckland's *Notes and Jottings*, p. 366.

only in latitude 76° . If these did not pass the winter in a high latitude they must have migrated north very early in the season because in April, when the whalers arrived on the scene, they invariably found them already there. Scoresby says: 'In 1815, some ships were near Spitsbergen in March and fished in the latitude of 80° where a great many whales were seen.'¹

Scoresby thought there were tribes of Greenland whales, but whether this was or was not the case cannot be now decided, because these interesting animals are now either very scarce or extinct. I might add that already in my father's time (1849-1893) the whalers had ceased looking for whales in April in latitudes 80° or 81° . Before his time, latitude 76° also ceased to yield whales.

CAPTURE

Owing to the fact that the plankton or 'food' is drifting, like the ice, south-west, the whales were usually caught in a less easterly or more westerly longitude as the season advanced. In some seasons the whalers followed the whales and the drifting plankton all the way from the waters north of Spitsbergen to the vicinity of Scoresby Sound, a distance I suppose of nearly 1,000 miles.

Owing, however, to the compact nature of the ice, whales were seldom caught between latitude $75\frac{1}{2}^{\circ}$ and $77\frac{1}{2}^{\circ}$ —hence there were said to be two 'fishings': a 'North' and a 'South.'

Owing probably to the plankton sinking as it drifts, and to the inability of the young whales to feed except where the plankton is near the surface, the young whales were usually found farthest north, the large ones farthest south. Among the ice, as my father says: 'The largest whales are taken between latitude 70° and latitude 75° N.; . . . 77° to $78^{\circ} 40'$ produces "second-sized" whales averaging 10 or 12 tons of oil each; while from 79° to $80^{\circ} 20'$ are found only "nursery whales."'

GENERAL

I conclude this paper with some general remarks on whales. They are mammals modified to lead, so far as is possible, a submarine or underwater life. Accordingly, they are provided with an extra amount of blood, very elastic lungs, and a *pars reticulata* (the deepest layer of the skin) which is very thick and rich in oil.

Blood has oxygen-absorbing properties and an extra supply of it is an obvious advantage to the whale. The

¹ *Arctic Regions*, Vol. II, p. 209.

extra blood is stored in networks or plexuses of blood vessels termed *retia mirabilia* and when the animal is under water it is doubtless discharged into the general circulation as it is required.

Great elasticity on the part of the lungs not only increases their efficiency as respiratory organs but it fits them to act as hydrostatic organs: when the whale wishes to 'settle' or sink it compresses them, when it wishes to float up it merely allows them to expand. As Scoresby says: 'A whale extended motionless at the surface of the sea, can sink in five or six seconds or less beyond the reach of its human enemies.'¹

The chief function of the highly modified *pars reticulata* or blubber appears to be hydrostatic: it diminishes the whale's specific gravity and its tendency to sink. Its thickness appears to be such that it suffices to swim the whale with, but not without, the aid of the lung air. Accordingly, Greenland and Bottlenose whales and Narwhals that died at the surface invariably floated, while those that died at a depth were invariably heavy and had to be hauled up. The carcase (*i.e.* the body deprived of its blubber) sinks almost like a stone.

The calf at birth is an exception. Scoresby (*Memoirs of Wernerian Society*, Vol. I, p. 578) says: 'The blubber of a "sucker" when very young, frequently contains little or no oil, but only a kind of milky fluid, in which case when the animal is deprived of its life, the body sinks to the bottom as also does the blubber when separated from it.'

Guide to the Study of the Anatomy of the Shark, the Necturus, and the Cat, by S. Eddy, C. P. Oliver, and J. P. Turner. London: Chapman and Hall, Ltd., vi+93 pp.+index, 11/-. A practical guide for the dissection of a fish (*Squalus acanthias*), an amphibian (*Necturus maculosus*), and a mammal. The fact that this book is written for students of Minnesota somewhat reduces its value as a general work; for instance, the omission of the skeleton of the shark and nerves of the cat. However, its value to students of these three types is undeniable, especially as chapters on the musculature of the cat and necturus are included, as well as a brief account of the skull of the codfish.

Laboratory Directions in General Zoology, by W. C. Curtis and Mary J. Guthrie. London: Chapman and Hall, Ltd., xxxiv+195 pp., 9/-. A truly excellent book containing instructions for laboratory work on many invertebrate types, the frog (one regrets the absence of more vertebrates dealt with in the same efficient manner), genetics and histology. Preliminary remarks to teacher and student are exactly to the point and not in the least pedantic, in fact the whole book may be described as exactly what both teacher and student want. It is confidently recommended to all teachers as being modern in conception and treatment. One may pay the authors a double compliment by saying that it is better even than their general textbook.

¹ *Arctic Regions*, Vol. I, p. 566.

NOTES ON A WESTMORLAND HERONRY

SYDNEY MOORHOUSE, F.R.G.S.

OWING to long-continued frost and snow in January and February the herons were late in returning to their nesting haunts at Dallam Towers (Westmorland's only heronry) this year, and when I visited the site on February 29th, 1940, I failed to see a single bird, although one of the men employed on the estate told me that he had seen some about. Many of the old nests had been destroyed by recent storms:

A fortnight later (March 14th) I found building in full swing and some forty-two nests were being erected. Later counts revealed between forty and forty-five nests being used, four of which were located in lighter timber to the west of the main heronry.

The earliest census of this Westmorland heronry appears to have been made in 1817 when eleven nests were recorded, and in 1877, Thomas Gough, of Arnbarrow, counted twenty-seven. There are, however, records of the heronry being used in 1775 when some of the trees in which the birds nested were felled and the herons endeavoured to transfer their settlement to tall trees already occupied by the rooks. Old Lakeland books tell of fierce fights between the rival tribes but authentic records are lacking. It is, however, obvious that the site was being occupied in the second part of the eighteenth century.

Westmorland's only other heronry was at Rydal Lake on an island among fir trees but this was deserted about 1870.

Near Thurland Castle, Tunstall, in the Lune Valley—about ten flight miles east of Dallam—is another heronry where Mr. A. N. Sharp and myself counted eighteen occupied nests on April 14th, while at Ashton Hall, on the south side of the Lune Estuary and some five miles west of Lancaster I counted fourteen nests in the plantations off the actual golf course. Herons have also frequented a clump of trees near the fairway for many seasons, but I was unable to make a close investigation, although field-glasses and inquiries made later seemed to indicate that the rooks were in possession here.

[In view of the effects of the severe weather of early 1940 upon some species it is interesting to note that all these Lancashire and Westmorland heronries show an increase this year over the numbers recorded for them in the year of the census (1928). The Lancashire Heronry at Ashton Hall appears to be new since 1928; but in Westmorland Mr. Moorhouse has overlooked the few birds that have bred at Elterwater since 1919.—EDS.]

HYPNUM CRISTA-CASTRENSIS L. IN YORKSHIRE

T. H. B. BEDFORD

Arnold Lees, in his *Flora of West Yorkshire*, 1888, describes *Hypnum crista-castrensis* as 'Very rare; a dying out species?' He records the following stations:

- (1) Dentdale and Sedbergh; Rev. G. P. Pinder.
- (2) Near the Ebbing and Flowing Well, Stackhouse, Settle; A. O. Black (1840).

There is no evidence that Lees himself actually saw this moss in Yorkshire.

Baker, in his *North Yorkshire*, 1906, mentions the following stations:

- (1) A station said to be extinct in the Castle Howard region (Ibbotson).
- (2) On the south side of the Tees near Gainford (Backhouse).
- (3) In the central valley in woods near Croft (Dalton).
- (4) In Upper Teesdale among the heather on the edge of Cronkley Fell (Black).

There is an obscure reference in *The Naturalist*, 1894, 10, to the occurrence of this moss near Gisburn in Ribblesdale. No authority is given, and its value accordingly remains problematic. It has been impossible to trace any additional stations, and a search for herbarium specimens has been unsuccessful.

Whatever may have been its status in Yorkshire in the past, *H. crista-castrensis* was unknown to present-day bryologists until its recent discovery by the writer in Penny Farm Gill (Baugh Fell). It is proposed to describe the position of this station in detail so that future workers may not fail to find it. The moss is growing on the drift-covered south slopes of Penny Farm Gill over a stretch of approximately $\frac{1}{4}$ -mile. The precise position of the station can best be indicated by reference to the six-inches-to-the-mile map of Yorkshire (West Riding), Sheet XLIV, S.W., Ed. 1910. Starting east of the wooded area, where the 800 ft. contour crosses the gill, the colony extends along the treeless slopes to the hollow directly west of the lettering 'Gill Laid.' It is growing in scattered patches over the whole of this region. The moss appears to be healthy and well grown, although no fruit has so far been discovered. The habitat is distinctly acid, as indicated by the predominance of polytrichum and sphagnum.

The writer is aware that objection may be taken to the disclosure of the exact position of the colony on the grounds that it may lead to excessive collecting which may ultimately exterminate the moss. Excessive collecting could undoubtedly do this or at least so reduce the moss that it would not survive an unfavourable year. Pinder reported *H. crista-castrensis* at Sedbergh and in Dentdale. All knowledge of the

location of these stations has now been lost, although there is no reason to doubt the accuracy of the records. This applies equally to the North Yorkshire stations mentioned by Baker. Such a loss of knowledge can only be regarded as lamentable, and it is for this reason that the writer, after some hesitation, has decided to disclose the exact position of the Penny Farm Gill station. It is to be hoped that bryologists and other field workers can be relied upon to treat with respect this, our only known colony of *H. crista-castrensis*.

SCARBOROUGH FIELD NATURALISTS' SOCIETY

AT a meeting of the Scarborough Field Naturalists' Society held in the Public Library on Monday, June 24th, a framed illuminated address was presented by the Society to its President, Mr. W. J. Clarke, F.Z.S., to mark its appreciation of his services to the Society during the last fifty years. Mr. E. R. Cross, in making the presentation, spoke of Mr. Clarke's long connection with the Society and the work he had done to make it a success. The text of the address is as follows :

Scarborough Field Naturalists' Society : Jubilee Celebration, November 11th, 1939. To Mr. W. J. Clarke, F.Z.S., President.

In this the Jubilee year of our Society, of which you were one of the founders, the members wish to place on record their high appreciation of your status as a naturalist, your unflinching devotion for half a century to the interests of the Society and your courtesy and kindness to all. Your beautifully illustrated lectures and your regular exhibits and reports have made the Society a living centre of Natural History in the district ; and as official reporter you have for many years maintained among the public a widespread interest in our activities.

We would record also our appreciation of your lively interest in the local Museum, your numerous contributions to *The Naturalist*, your standing in scientific circles as an authority on Ornithology and Marine Biology, and especially the combination of qualities in yourself which have helped to make us one of the most vigorous societies in the Yorkshire Naturalists' Union.

Your zeal in promoting the love and study of nature, and your unwearying service to the best interests of the Society have made you the friend of every member.

(Signed on their behalf)

D. W. BEVAN, *Ex-President*.

H. H. FARWIG, *Hon. Secretary*.

The address is beautifully illuminated on vellum, and has been very skilfully executed by Mr. E. O. Bevan.

SOME NOTES ON THE HISTORY OF THE NATURALIST, 1875-1940

E. G. BAYFORD

WITH this issue *The Naturalist* will enter upon the sixty-sixth year of its existence. The preceding number, viz., that for July, will thus be No. 780 (65×12) of the current series, and not 775 as would have been printed on the cover had not the error been discovered in time to make the necessary correction. Until I commenced to draw up this notice the error had not caught my attention, and when it did, I assumed that it was due to overlooking the five extra numbers in 1885. Further investigation proved this assumption to be wrong. The earliest cover that I could examine was for January, 1910, which is numbered '414 of the current series.' This being the correct number it was evident that the error had arisen since that date, and further research showed it to be a cumulative one, as follows :

December, 1912	}	are both numbered 449.
January, 1913		
December, 1916	}	are both numbered 496.
January, 1917		
September, 1917	}	are both numbered 504.
October, 1917		
February, 1918	}	are both numbered 508.
March, 1918		
January, 1933	}	are both numbered 686.
February, 1933		

As few of our readers will have access to the first number I make no apology for reproducing an essential portion of the 'Address' with which the Editors introduced their venture :

'Ever since the untimely decease of the journal published in this district, which appeared for three years (1865-6-7), under the somewhat general title of *The Naturalist*, a want has been felt in Yorkshire for a similar publication for the purpose of recording the observations of amateur naturalists and local Societies. This want, which had been growing for some years, was recently attempted to be supplied by a journal issued by a member of one of our local Natural History Societies—that of Wakefield—which took the title of the *Naturalist's Recorder*. This, however, owing to a variety of causes, had but a short-lived existence. The Societies in the Union of the West Riding Consolidated Naturalists' Society then took the matter into serious consideration at several of their recent meetings, with a view to again attempting to meet the want felt by all our members; and at the meeting held at Rastrick, near Huddersfield, on June 12th, a prospectus was submitted, and finally agreed to, as the basis of a new journal, *The Yorkshire Naturalist*, which thus makes its first appearance to-day under our editorship.'

To this 'Address,' which occupies nearly two pages, the following postscript is appended :

'Since the above was in type we have received many letters suggesting that we should adopt a title somewhat wider in its scope ;

agreeably with these suggestions, and also with a resolution passed at the last meeting of the Consolidated Societies, the title of this journal will be simply *The Naturalist*. We hope this will meet the views of all our friends.'

The names of the Editors are not given, and did not appear until the end of the year, when they are given on the title page, 'Chas. P. Hobkirk and G. T. Porritt, F.L.S.,' both of Huddersfield, in which town the magazine was printed. Under their editorship *The Naturalist* prospered for nine years, when they handed over their charge to the newly-formed Yorkshire Naturalists' Union, which had grown out of and incorporated the West Riding Consolidated Naturalists' Society. The new Editors were William Denison Roebuck, F.L.S., and William Eagle Clark, F.L.S., Joint Secretaries of the Union, both of Leeds, to which city the publication was removed. Their first volume (Vol. X) was continued to the end of 1885, and so consisted of seventeen (17) monthly parts. Thenceforward the numbering of volumes ceased, future volumes being distinguished only by the year in which they were published, and cited as *The Naturalist* for 1886 and so on down to the present day.

In a future article I purpose dealing with the predecessors of *The Naturalist*, whose issues have been used, in my opinion, improperly, to inflate the correct numbers of the magazine into the number which until recently, appeared in bolder type on our cover.

NOTES ON THE NESTING OF A PAIR OF MUTE SWANS

H. B. BOOTH, M.B.O.U.

IN the early spring of 1938 a pair of swans came to the smallish lake in Denton Park, on the opposite side of the River Wharfe to Ben Rhydding, where they settled down. Eventually they built a nest and laid six eggs from which they hatched and reared six fine cygnets.

The eight birds remained on the lake until the late autumn and did not leave until the young were well able to fly and were as large as their parents. In leaving, one of the cygnets had an accident by colliding with some telegraph wires. This was the first time to my knowledge that swans had nested on this water.

In 1939 it appeared as though they were not returning, but about the middle of April the pair turned up, hurriedly built a nest, and laid seven eggs. From these, seven young appeared on the water on June 4th. From now onwards is the most interesting part of the story.

On June 8th, when the young birds were only four days old, and only like small balls of fluff, for some unknown

reason the old birds marched their family down to the river. Although the River Wharfe is only about half a mile in a direct flight line from the lake, the journey is beset by two unsurmountable walls, and it was a great puzzle to me to know how the full family had succeeded in reaching the river safely. Later I heard from a milking-hand that he had seen them walking down the main road in the early hours of the morning—by a circuitous route of at the least three-fourths of a mile!

It was another puzzle to know why the parent birds should take their young away from the lake where six fine healthy birds had been fully reared the previous year. The only conclusion I could arrive at was that the healthy family of 1938 had consumed all—or made scarce—the suitable food for the nestlings of 1939.

Fortunately, the river happened to be low at the time of their arrival, and they settled down at a spot where there was exposed a great mass of green vegetation. It was also fortunate for me, as it was quite convenient to me to pass the place daily.

I found that they confined themselves chiefly to two great banks of a green moss-like alga (*Cladophora glomerata*), which was usually above, or just below, the water when the river was low. Further out in the deeper water of the river were large masses of the Curled Pondweed (*Potamogeton crispus*, kindly named for me by Mr. C. A. Cheetham). Although this latter plant is given in some text-books as swan food, I never saw either old or young birds eating it.

For about a month after their arrival, the river kept at about its normal low level, and both young and old birds kept feeding on the *C. glomerata*, cropping it exactly like geese crop grass. Then when the floods came with the rains the swan family moved up and down the river for fresh feeding grounds, and sometimes I did not see them for nearly a week. When the river was flooded they could have obtained the Curled Pondweed, which was floating down the stream in long threads, but the *C. glomerata* was covered by several feet of rushing water.

By the end of October the seven cygnets had developed into fine birds, and were about the same size as their parents, when two of them left the family party to start life on their own. In November the other cygnets left, and the pair of old birds were left by themselves—the cygnets being in pairs or alone.

On March 3rd, 1940, a pair of swans returned to this lake, but they had not the orange-yellow coloured beaks of full maturity, and they remained only for a short time, so that there was no nest in 1940.

In the severe frost of January two swans were reported as frozen to death on the river, but I was not able to go to see them, so that I am unable to say whether they were adult or immature birds. It is, of course, possible that they were the pair of old birds, because so far as I know nothing has been seen of them since.

The Handbook of British Birds, by H. F. Witherby (Editor), and Rev. F. C. R. Jourdain, Norman F. Ticehurst and Bernard W. Tucker, Volume IV, pp. xiv+461, with 33 plates, text figures, and maps. Witherby, 25/- or 21/- to subscribers for the five volumes. This eagerly-awaited volume deals with the 126 species on the British List which lie between Cormorants and the Crane inclusive. In this section of their work we think the Editor and his colleagues have surpassed themselves. The families dealt with provide some of the most difficult problems in British ornithology. Breeding places are widely scattered, plumages of many nestlings and immature birds are known well only to a few workers, and in the case of the waders, minor details regarding breeding habits, voice, etc., are very often difficult to observe. The wealth of information supplied under these headings is simply astounding. The volume is a monument to the value of team work conducted by skilled and scientific collaborators. The illustrations, taken together with the textual descriptions are a complete guide to plumages.

Island Years, by F. Fraser Darling, pp. xii+306, with 23 plates from photographs by the Author. G. Bell & Sons, 12/-. Probably the majority of the readers of this delightful book will envy Dr. Fraser Darling's three years' life on lonely islands off the North and North-West coasts of Scotland. The author was accompanied by his wife and young son, and in his book he gives a vivid account of their adventures in constructing and maintaining an island home, dealing with difficult commissariat problems, and making innumerable observations on the wild life around them. The book is the record of the daily life of human beings, rather than a detailed account of natural history research work. This is all to the good. Most workers in the more inaccessible parts of the earth, in their eagerness to write about wild life, do not say enough of their own struggle for existence. Dr. Darling writes brilliantly, as those who have read his scientific work will know, and he has excelled himself in this volume. It can be heartily recommended as an antidote to depression in these troublous times.

Plant Physiology, by B. S. Meyer and D. B. Anderson, pp. x+696. Chapman and Hall, 24/-. In recent years new standards have been set by the appearance of many text-books on plant physiology. The present volume by the Professors of Botany at the Ohio State and North Carolina Universities is one of the best treatments of the subject we have seen. The authors rightly devote much space to a consideration of physico-chemical principles and the treatment of colloidal systems, interfacial phenomena, diffusion, osmosis and allied phenomena is extremely well done. The remaining chapters cover every branch of the subject, the discussion of the various topics being based on data selected from the original literature, much of which is presented in tabular or graphical form. In the authors' words no attempt is made to give 'an encyclopædic compilation of undigested and sometimes contradictory facts,' but 'when conflicting evidence is presented some attempt at evaluation is usually made.' Short lists of books and original papers are appended to each chapter together with a list of carefully chosen discussion questions well calculated to stimulate thought and discussion. This is a well-written and illustrated book which can be unhesitatingly recommended to all university and college students.

YORKSHIRE NATURALISTS AT AUSTWICK

May 10th to 13th, 1940

A FORTNIGHT prior to the Whitsun Meeting it seemed foolish to think of holding the excursion, as vegetation generally seemed still held in its winter sleep. Fortunately the inevitable change came along in time, the first rush of spring foliage was with us, and things altered quickly after the meeting, and at the month end the exceptional display of May blossom was in odd cases past its best and beginning to wither.

We were glad to welcome our President, Dr. Walter Watson, who was present on all the excursions and took the chair at the meeting, where some 18 new members were admitted, most of them being due to the efforts of the retiring President, Mr. Ralph Chislett. At this meeting, Professor W. H. Pearsall expressed the view that Austwick Moss as one of the few primitive swamp areas of its type in the county should be taken over as a nature reserve.

Birds at Austwick at Whitsuntide.—Mr. Ralph Chislett writes : Two factors called for special consideration. A country with such clearly-defined types of habitat naturally added to the list of species observed as each type was visited. Not very long previously the countryside was gripped in long and severe frost, and more recently still lay under heavy accumulations of snow, with consequent abnormal movements of birds, and with unusually large numbers of fatalities among some resident species.

Under the locally expert guidance of Mr. W. K. Mattinson, who generously placed himself at our disposal during the whole week-end, the ornithological party first passed through sloping grasslands to the ' Mosses ' of Lawkland and Austwick. Yellow Wagtails occurred in numbers all over the grasslands up to the foot of the ' clints,' in contrast to many districts where the species is looked upon as a bird of the low-lying meadows. Grey Wagtails, and even the Pied, were much less numerous. About the Mosses, Curlews (two nests seen each with four eggs) were common. There were many drumming Snipe and calling Redshanks (nest seen with four eggs), while Lapwings had young and others were laying eggs, possibly replaced clutches. Reed Buntings and Sedge Warblers were present in some numbers, but were exceeded by the ubiquitous Willow Warblers. Several Waterhens had nests containing eggs by streamsides where Sandpipers also were fairly common. By the River Wenning a pair of Oystercatchers were noted. Dippers were scarce. In one wood through which we passed a Great Spotted Woodpecker was disturbed at work on a stump.

On the following day, after the grass valley with its Yellow Wagtails had been left below, the scars of Moughton were explored, where bird life was scarce. Wheatears were in evidence, but the Ring Ousel was the only species in normal numbers (W.K.M.). Crossing to the heather below Ingleborough, Meadow Pipits became more numerous (a nest held four eggs), Grouse appeared, and a few Golden Plovers and Curlews, but the latter had been more numerous on the lower-lying Mosses. The discovery of a freshly-killed and partly eaten pigeon pointed to the presence of a Peregrine Falcon in the neighbourhood.

On the Monday a visit was paid to one of the pools on Dovananter Moor, where some 40 pairs of Black-headed Gulls were nesting ; most of the approachable nests had been robbed of their eggs. Another pool some distance away was colonised, and through the glasses birds could be seen sitting. A Curlew's nest with four eggs was seen, and two Grouse nests with seven and ten eggs respectively. Golden Plovers evidently had eggs or young. Referring to the smaller numbers of breeding Meadow Pipits than usual, the keeper said the species was late in making its appearance and thought that others would yet arrive. Some other species have certainly ' filled up ' in this way this year.

In the afternoon a hasty visit to a streamside wood resulted in adding several species to our list ; among them were Woodcock, Long-tailed Tit, Wood Warbler, Garden Warbler, and a single male Common Wren—the only one to be heard singing during the week-end.

Other species seen in the district included Redstart (two cocks), Lesser Redpoll, Tree Pipit, a Hedge-sparrow (nesting in Juniper), Kestrel, and Sparrowhawk ; which with some common species made a total list identified during the week-end of 58 species.

Conchology.—Mrs. E. M. Morehouse sends this : Fortunately the weather conditions were all that could be desired, but not in favour of seeing so many of the molluscs as one could wish ; quite a number were noted nevertheless.

It was a great pleasure to the writer to find *Clausilia cravenensis* Taylor, in the crevices of the rock-face just opposite the farm where the members commenced their investigations of Crummack Dale. As this habitat was practically where this mollusc was originally found, it seems quite worthy of especial remark. Although so very dry in this cul-de-sac that many large stones had to be turned over, ten species were noted ; among these were *Pupa secale* Drap. and *Pyramidula rupestris* Drap., the two latter are always of interest to anyone living in the flat country.

Quite a large area was scoured, but only the left-hand side of two ridges of limestone marl yielded *Helicella itala* L., these ridges were quite near the aforementioned cul-de-sac.

The following list may be followed : 1, The road between Austwick and Feizor ; 2, Crummack Dale ; 3, Stream base of Hunter Styte at the foot of Moughton Scar ; 4, Clapham ; 5, Feizor.

Pyramidula rotundata Müll. 1 2.

P. rupestris Drap. — 2.

Vitrea alliaria Mill. 1.

V. pura Alder. — 2 — 4.

V. cellaria Müll. 1.

V. rogersi B. B. Woodward. 1.

V. nitidula Drap. — 2 — 4.

Vitrina pellucida Müll. — — — 5.

Sphyradium edentulum Drap. — 2 —.

Helicella itala L. — 2 —.

Hygromia hispida L. — — — 4.

H. rufescens Pennant. — — — 4.

H. granulata Alder. 1. — — 4.

Arianta abustorum L. 1.

Helix nemoralis L. 1, 2, 3, 4, 5. — 2.

H. nemoralis L. 1, 2, 3 (4, 5). — 2.

Jamnia secale Drap. — 2.

Cochlicopa lubrica Müll. 1 2.

Ena obscura Müll. — 2.

Clausilia cravenensis Taylor. — 2.

C. bidentata Strom. 1.

Agriolimax agrestis L. 1.

A. agrestis v. *reticulata* Moqtan. 1.

Limax maximus L. — — — 5.

Arion ater v. *atterima* Taylor. — — — 4.

Ancylus fluviatilis Müll. — — 3.

Succinea putris L. — — 3.

Flowering Plants (W. A. Sledge) : In spite of the unusually early date of Whitsuntide many interesting plants were seen. The excursions were all over well-worked ground and it was not to be expected that any additions would be made to the lists of a district which has been so

intensively studied. Under the Secretary's guidance however many of the rarer species were revisited in their well-known localities. The early date of the excursion had the advantage of enabling us to see *Potentilla verna* in full flower on Oxenber, while *Andromeda* was seen at its best on Austwick Moss. At Feizor Wood, Wharfe Wood, and Oxenber, primroses were in full flower, and *Hippocrepis comosa*, *Prunus Padus*, *Saxifraga hypnoides*, *Pyrola minor*, and *Polygonatum officinale* were noted. On Moughton Fell *Arenaria gothica* and *A. verna* were seen in flower, and the turf was pink with *Primula farinosa* about Sulber. Its forward condition here contrasted strongly with that at Austwick Moss and Wharfe Wood, 500 ft. lower, where hardly a flower was yet opened. At Thieves Moss *Schoenus nigricans* was seen, and on the limestone cliffs near by, *Convallaria majalis*. Other notable species seen were *Silene maritima*, *Saxifraga oppositifolia*, *Veronica hybrida*, *Listara cordata*, *Asplenium viride*, and *Polystichum Lonchitis*, while *Sesleria cærulea* was everywhere and in good condition on the limestone. At Austwick Moss flowers were much scarcer than on the dry limestone areas visited on the preceding days, but *Andromeda* was a notable exception and few of us had seen it in such beauty before. *Menyanthes trifoliata*, *Viola palustris*, and *Valeriana dioica* were among the few plants listed which were in bloom, but *Stellaria nemorum*, *Potentilla palustris*, *Oxycoccus quadripetalus*, *Utricularia minor*, *Schoenus nigricans*, and *Eriophorum latifolium* were all seen. At Lawkland Moss *Trollius europæus* and *Serratula tinctoria* were also observed, and *Ribes alpinum* was seen in a hedge near by. The rarer sedges were not yet in evidence.

Ecology (W. H. Pearsall) : Of the many ecological problems to be studied in this district, only a few received any attention. I was personally very much struck by the very great changes which had taken place on the top of Moughton since I was last a frequent visitor to it, some ten years ago. Peat denudation and redistribution was very evident and on a scale which I do not remember, there being at least four areas of bare peat twenty to thirty yards square freshly scattered. Most of the peat areas showed signs of great desiccation and in most cases the *Calluna* which formerly fringed them was dead and the margins were now being colonised by bilberry. Lastly, almost all the juniper south and east of Thieves' Moss was dead and this locality has now become an arid waste. It appears that most of the changes observed could be explained on the assumption that Moughton (and similar areas) are becoming very much drier. It might be that this was due simply to a succession of dry springs and dry summers. I think, however, that the opening of the drainage cracks in the limestone and the washing away of soil may be the main cause of change, accelerated at the present by the differences in weather which have been observed during the past few years. Such changes may, of course, have bearing upon the degeneration of juniper and in this connection Mr. A. Thompson made the pertinent observation that the Lake District juniper heaths seem to be consistently moist.

A number of soil samples was taken. These dealing particularly with the soils on which *Schoenus nigricans* was to be found. In most cases these overlie marl and the surface peat is black and amorphous. The marl consistently gave a pH value of 7.8 and a similar value was observed usually for the peat when *Schoenus* was very abundant or dominant, though rather lower values (pH 7.0) were found when the sedge was only frequent or occasional as on the edge of Austwick Moss. Thus, in this area, *Schoenus* is undoubtedly characteristic of neutral to alkaline soils as indeed one might expect from its common association with marl.

The Thieves' Moss peat showed a series of communities growing at different levels above the ground water, here undoubtedly alkaline.

Four vegetation types were observed, each characterising soils of different pH value. The lowest had a vegetation chiefly of *Carex flava*, with much *Eriophorum angustifolium* and *Schoenus*, the soil pH being 6.99. At a slightly higher level, *Sphagnum cymbifolium* and *Erica tetralix* were most abundant, with *Carex panicea*, *Aulacomnium palustre*, and *Drosera rotundifolia* on a soil of pH 5.42. With *Scirpus cæspitosus*, *Sphagnum papillosum*, and *Erica tetralix*, at a still higher level, the pH was 4.06. *Calluna* was also present. Where *Eriophorum vaginatum* was dominant the pH was 3.39, this being the most acid soil collected. The most alkaline was from a *Schænus* flush just above the Moss, where the soil pH was 7.82.

Some of the soil pH values on Austwick Moss may also be of general interest. Samples taken from the field on the Austwick side ranged from pH 7.02 (*Schoenus* and *Juncus sylvaticus*) to 4.01 (*Molinia* and *Salix repens*). On the Moss, the area with *Phragmites*-*Myrica*-*Molinia*-*Sphagnum cymbifolium* gave a peat pH of 5.35. A dry *Molinietum* gave a soil pH of 3.91. A mixed willow wood with *Hypnum cuspidatum*, *Caltha*, and *Spiræa Ulmaria* gave a peat of pH 6.36, and where, in the same wood, *Betula pubescens* was dominant with *Myrica*, *Molinia*, and *Sphagnum fimbriatum*, the pH rose to 4.73. These differences are partly due to the flushing effects of the stream waters, which are fairly rich in lime and so tend to raise the pH. Values below pH 5, however, are also due to the oxidation of organic matter and to the production of acids from this process when lime is deficient.

Several members of the party devoted time to the examination of the peaty pools which have been described in *The Naturalist* on previous occasions. It was noticed that the *Sphagnum* pools are now of two kinds, as some of them are now occupied by *Sphagnum squarrosum* wholly or in part. Formerly *S. cuspidatum* was the characteristic pool form, though, of course, other species appear when the free water is no longer visible. It is worthy of record that Scandinavian authors regard *S. squarrosum* as a species with a higher mineral requirement than *S. cuspidatum*, and so possibly on Austwick Moss it occupies pools intermediate between the acid *S. cuspidatum* pools and the less acid ones in which *Hypnum fluitans* is found.

Bryology (F. E. Milsom): The ground covered by the excursions has been often worked before, but presented the same possibilities as always. The most interesting find was that of *Orthodontium gracile* Schaæg. var. *heterocarpum* Wats., which turned up in two new habitats, one on a decaying tree-trunk in Wharfe Wood, and the other on the side of a peaty ditch on Austwick Moss. On marshy ground in Wharfe Wood there was a fine show of *Mnium subglobosum* B. & S. in good fruit and with abundance of the male plant also. On Austwick Moss *Splachnum ampullaceum* L. was seen in its usual station, and in profusion on the tree-covered areas of the Moss was a large form of *Hypnum cordifolium* Hedw.

Though not found during the present excursion, two interesting discoveries were made in Wharfe Wood at Easter, namely *Fissidens exilis* Hedw. and *Weisia mucronata* B. & S. var. *subgymnostoma* Limpr.

Fungi.—Mr. W. G. Bramley writes: Chief attention was paid to the Uredines and Pyrenomycetes. Agarics were scarce, as was to be expected, especially as two of the excursions were on very dry and rocky terrain. *Omphalia umbellifera* was the commonest in the wet and boggy places. Two or three species were not in a condition for identification. *Uromyces scillarum* was plentiful in one or two rather restricted areas, and the same applies to *Puccinia fusca*. *Urocystis anemones* was fairly abundant on *Anemone*, but was not seen on *Ranunculus repens*, which is the more common host generally.

Several of the pyrenos are held over for further study and confirmation. Several are new to the V.C. chiefly due to the lack of interest taken in the group.

O. = Oxenber. C. = Crummack and Moughton.
A. = Austwick and Lawkland Moss. L. = Lawkland Wood.

MYXOMYCETES

Badhamia utriculosa Berk., A. *T. varia* Pers., O.A.
Physarum viride Pers., L. *T. lutescens* List., L.
Reticularia lycoperdon Bull., C.L. *T. botrytis* Pers., A.L.
Trichia affinis De Bary, L.

PHYCOMYCETES

Peronospora ficariæ Tul., O.A.L., frequent on *Ranunculus ficaria* and *R. repens*.
Plasmopara pusilla (de Bary) Schroet., on anemone., O.A.C.L.
Empusa muscæ Cohn., on flies.

ASCOMYCETES

Podosphæra oxyacanthæ (D.C.) de Bary, A., on Spirea, conidial stage.
Ascobolus stercorarius (Bull.) Schrad., C., on horse dung.
Belonidium pruinoseum Mass., C.L., on Diatrype.
Dasyscypha virginea (Batsch.) Fckl., C.
Mollisea cinerea (Batsch.) Fr., C.A.L.
**Tapesia fusca* (Pers.) Fckl., C. (det. Miss Wakefield).
Rhytisma acerinum (Pers.) Fr., O.L. (ascophores).
R. andromedæ (Pers.) Fr., A., on Andromeda.
Lophodermium juniperinum de Not., C.
Nectria cinnabarina (Tode.) Fr., O.C.L. (mostly conidia).
N. aquifolia (Fr.) Berk., L., on holly.
N. sinopica Fr., O., on ivy.
N. coccinea (Pers.) Fr., O.L.
Dialonectria sanguinea (Bull.) Cke., O.L.A., on effused Diatrype.
Rhopographis filicinus (Fr.) Nils., O.C.A.L., on bracken.
Leptospora spermoides (Hoffm.) Fckl., L.
Melanomma pulvis-pyrius (Pers.) Fr., O.A.C.L.
Leptosphæria acuta (M. and G.) Karst., A.C.L.
**L. derasa* (B. and Br.) Auersw., Cave Hole Wood on ragwort stems.
**Ophiobolus acuminatus* (Sow.) Duby., O.A.L., Cave Hole Wood, on thistle stems.
Gnomonia cerastis (Russ.) Auersw. (= *Setacea* Auersw.), O. (det. Miss Wakefield).
Valsa ambiens (Agg.) on Beech L. on hawthorn, Cave Hole Wood.
**Diaporthe leiphæmia* (Fr.) Sacc., C.L., on oak.
†*Eutype flavo-virens* (Fr.) Tul., O.L.A., superficially like *Diatrype stigma*.
**Cryptospora suffusa* (Fr.) Tul., L., on alder.
Melanconis stilbostoma (Fr.) Tul., on birch, common.
Diatrype stigma (Hoffm.) Fr., common on hawthorn, hazel, birch, oak, etc.
D. disciformis (Hoffm.) de Not., L., Cave Hole Wood on beech.
Diatrypella favacea (Fr.) Ces. and de Not., L.O., on birch.
D. verruciformis (Ehr.) Nils., O.L., on hazel.
Sillia ferruginea Karst., O., on hazel.
Ustulina vulgaris Tul., L.O.
Hypoxylon coccineum Bull., Cave Hole Wood, on beech.
H. fuscum (Pers.) Fr., O., on hazel.
H. multiforme Fr., L., on birch, elm.
H. rubiginosum (Pers.) Fr., O., on ash.
H. howeianum Peck., A.O., on hawthorn.

Xylaria hypoxylon (Linn.) Fr., A.C.L. (ascophores).
Endodothella junci (Fr.) T. and S., on *Juncus*, O.A.L.C.
Hypocrea pulvinata Fckl., L., on *Polyporus betulinus*.
Sclerotinia cureyana (Beck.) Karst., A.
Cryptosphaeria (Valsa) eunomia (Fr.) Fckl., O., on ash.
Cryptodiaporthe salicina (Curr.) Wehm., A., on *Salix*.

BASIDIOMYCETES

† *Entyloma ranunculis* Schroet., O., on *Ranunculus ficaria* (conidia only).
Urocystis anemones (Pers.) Winter, O.A.L., on anemone, fairly frequent.
Triphragmium ulmariae Wint., II, A., on *Spirea*.
Phragmidium fragariastrum Schroet., II, O.C., on *P. fragariastrum*.
P. sanguisorbæ Schroet., II, O.C., on *Poterium sanguisorba*.
Gymnosporangium clavariæforme D.C., III, C., on Juniper.
Uromyces valerianæ (Schum.) Fckl., O.I., A.L., on *V. officinale*.
U. alchemillæ Lév., II, O.C.A.L., on *Alchemilla*.
U. ficariæ (Schum.) Lév., III, O.A.L., on *Ran. ficariæ*.
U. scillarum (Grev.) Wint., III., O.L., on *Scilla*.
U. dactylidis Orth, O.I., A., on *Ran. repens*.
U. poæ Rabenh., O.I., O.A.C.L., on *Ran. ficaria*.
Puccinia obtegens Tul., O.II, Cave Hole Wood, on *Cirsium arvense*.
P. valantiæ Pers., III, L., on *Galium saxatile*.
P. betonica D.C., III, O.L., on *Stachys betonica*.
P. tumida Grev., III, O.L., on *Conopodium denudatum*.
P. violæ (Schum.) D.C., O.I, O.L., on *V. riviniana*.
P. fusca Wint., III, O.A.C.L., frequent on Anemone.
P. pringsheimiana Kleb., O.I., A., on *Ribes grossularia*.
P. phragmites (Schum.) Roem., O.I, old III, A., O.I on *Rumex crispus*, frequent. III on *Phragmites*.
P. poarum Nils., O.I, Cave Hole Wood, on *Tussilago*.
P. baryi Wint., old III, C. on *Brachypodium*.

Omphalia umbellifera (Linn.) Fr., C.A.
Galera hypnorum (Schrank.) Fr., O.C.A.
Stropharia semiglobata (Batsch.) Fr., C.A.
Anellaria separata (Linn.) Karst., C.
Polyporus brumalis (Pers.) Fr., L.
P. betulinus (Bull.) Fr., L.A.
Fomes pomaceus (Pers.) Fr., A. (det. Miss Wakefield).
F. ferruginosa (Schrad.) Mass., O.A.
Polystictus versicolor (Linn.) Fr., O.A.L.
Mycoleptodon fimbriatum (Pers.) Bond., O. (det. Miss Wakefield).
Stereum hirsutum (Willd.) Fr., O.A.L.
† *Hymenochaete cinnamomea* (Pers.) Bres., L., on hazel branches.
Corticeum læve (Pers.) Quel., O.A.L.
C. confluens Fr., A.L.
C. albo stramineum (Bres.) B. and G., A.L.
* *Peniophora pallidula* Bres., A. (det. Miss Wakefield).
P. incarnata (Pers.) Cke., L.C.
P. cinerea (Fr.) Cke., C.L.
Auricularia auricula-judæ (Linn.) Schroet., L.
Exidia glandulosa (Bull.) Fr., L.
Dacryomyces deliquescens (Bull.) Duby, O.A.C.L., on dead Juniper at Thieves Moss and Moughton.

FUNGI IMPERFECTI

Phoma herbarum (Agg.) on Herbaceous stems.
Leptostroma spiræinum Vest., A. (*Spiræ* Fr.) (det. Miss Wakefield).
Botrytis cinerea f. *scerotioiphila* (Rab.) Sacc. A.

Tilachlidium tomentosum (Schrad.) Linn., A.L., on *Trichia botrytis*.
Aegerita candida Pers., A.

* Not recorded in Catalogue of Yorkshire Fungi for V.C. 64.

† Not recorded in Catalogue of Yorkshire Fungi.

Sphagnum.—Mr. A. Thompson sends the following lists :

Collected in bog at foot of Oxenber, May 11th, 1940.

S. rubellum Wils., *S. plumulosum* Röhl., **S. inundatum* Warnst. var. *laxifolium* W., *S. auriculatum* Schp. var. *laxifolium* W., *S. papillosum* Lindb. var. *normale* W., *S. cymbifolium* Ehrh.

Collected in bog on Moughton, May 12th, 1940.

S. fimbriatum Wils. var. *laxifolium* Warnst., and var. *intermedium* Russ., *S. rubellum* Wils., *S. plumulosum* Röhl., *S. auriculatum* Schp., *S. papillosum* Wils. var. *normale* Warnst., *S. cymbifolium* Ehrh.

Collected on Lawkland Moss, May 13th, 1940. Most of the specimens small.

S. fimbriatum Wils. var. *intermedium* Russ., and var. *laxifolium* Warnst., *S. plumulosum* Röhl., *S. recurvum* P. de B. var. *robustum* Breidl., **S. balticum* Russ. (the only other locality in Yorkshire in which I have found this species is Thorne Waste), *S. fallax* Klinggr., *S. papillosum* Lindb. var. *normale* W., and var. *sublæve* Limpr., *S. cymbifolium* Ehrh.

The only additions to my previous list (given below) for Austwick Moss are :

**S. inundatum* W. var. *robustum* (W.) Sherr., *S. magellanicum* Er. d., and *S. squarrosum* Pers. var. *spectabile* Russ.

Collected on Austwick Moss, August 14th, 1934.

S. fimbriatum Wils. var. *intermedium* Russ., var. *tenue* Grav., *S. rubellum* Wils., *S. quinquefarium* Warnst., *S. squarrosum* Pers. var. *subquarrosum* Russ., **S. pulchrum* Warnst., *S. recurvum* P. de B. var. *robustum* Breidler, var. *majus* Angstr., *S. fallax* Klinggr. var. *laxifolium* Warnst., *S. cuspidatum* Ehrh. *var. *falcatum* Russ. var. *plumosum* Schp., *S. papillosum* Lindb. var. *normale* W., *S. cymbifolium* Ehrh.

July 5th, 1936: **S. fimbriatum* Wils. var. *laxifolium* Warnst., **S. amblyphyllum* Russ. var. *macrophyllum* Warnst., **S. crassidatum* Warnst. var. *diversifolium* Warnst.

Those with * are new records for V.C. 64.

Entomology.—Messrs. J. H. Ashworth and J. Wood gave reports on some insects seen, perhaps the most unexpected being the Peacock and the Orange-tip Butterflies, both of which are very unusual on the mosses here. The only dragonfly seen was *Pyrrosoma nymphula*, a few of the early ones having just emerged. Among the two-winged flies the empty pupa cases of *Corethra* and the mosquito, *Aedes punctor* Kby (*nemorosus*) were plentiful on some of the pools, but the insects were not troublesome, the most frequent *Tipula* was the cotton-grass species, *T. subnodicornis* Ztt. (*plumbea*) with a few *vittata* Mg. and *lateralis* Mg. in the ditches; other odd specimens caught were *lunata* L. (*ochracea*), *oleracea* L., and *rufina* Mg. *Prionocera turcica* F. (*T. Diana*) was seen on a few pools, and *Pacilostola punctata* Schrk. was fairly plentiful with a few *Limnophila meigenii* Ver. and a single *Ptychoptera contaminata* L. The most interesting Hoverfly caught was *Syrphus arcticus* Ztt. others being *Eristalis pertinax* Scop., *E. intricarius* L., and *Syrphus ribesii* L.

In the crevices of the limestone pavement *Dactylolabis sexmaculata* Mcq. (*frauenfeldti*) was fairly common and later in the week very abundant in similar places on Sulber at 1,300 ft. O.D.

YORKSHIRE NATURALISTS IN THE KIRKBURTON VALLEY

June 1st, 1940

OUR divisional secretary, Dr. J. Grainger, provided us with ample work in trying to cover the woodlands where permission had been obtained for investigation on this occasion. The weather was again favourable and the meeting was well attended. The thanks of the members were accorded for the permission given by the West Riding County Council through Dr. D. K. Bruce and by P. J. Norton, Esq., and Mrs. T. H. Moore.

Botany.—Mr. W. E. L. Wattam writes: The area investigated was an extensive range of woodlands in the upper part of the Kirkburton valley known as Storthes Hall Wood, Broomstyle Wood, Hartley Bank Wood, Boothroyd Wood, and Clough Wood, the whole forming a typical example of a coal measure sandstone zone, in parts having humus of good depth and generally moist, thus producing a vegetation mesophytic in character. Broomstyle Wood, of mixed deciduous trees, sycamore, mountain elm, and oak being dominants, has a ground vegetation of large sheets of *Mercurialis*, celandine, wood anemone, wood avens, yellow dead nettle, woundwort, hogweed, wood angelica, broad-leaved garlic, ivy, *Bromus asper*, and the male and lady ferns. Where the canopy was more open *Anthriscus vulgaris* completely controlled such areas. Hartley Bank Wood which succeeds has a tree flora of similar character to that already mentioned, but the trees mask the face of quarry workings for quite three parts in length. These disclosed the Elland Flagstones. Towards the top end of this wood the ground vegetation is xerophytic in character, *Deschampsia* being the dominant grass with *Galium saxatile* and *Melampyrum*; elsewhere moisture and shade help the dominancy of the mesophytic vegetation previously mentioned. Prior to entering Storthes Hall Wood, the largest of the areas, is rough pasture land with a stream. Here there have been marked changes in the tree flora during the past twenty-five years. During that period considerable felling has taken place, magnificent examples of oak, beech, sycamore and Scot's pine providing valuable timber. The replacement has in main part been the planting of coniferous trees, cluster, Corsican, and Scot's pine, North American spruce, Douglas fir, and larch. These newly-planted areas are thriving, but the ground beneath is practically devoid of vegetation, despite the accumulation of humus. There is a gradual rise in height from north to south, and until the plateau is reached the ground vegetation is almost an unbroken sheet of bracken with *Scilla festalis* and *Holcus mollis*. This particular lower portion of the wood has been replanted with beech, sycamore, sweet chestnut, and a few *Betula alba*. A further portion, extending westwards, has been planted with the conifers previously described. From 1937 to 1939 the old portions of the woodlands of the plateau were practically cleared. A considerable portion of this area was poorly developed birch (*B. alba* and *B. verrucosa*) of no commercial value. During the clearance the disturbance of the ground resulted in seedling birch upspringing in such numbers that, prior to replanting with other trees, drastic measures had to be taken to destroy them. The replacement has been by conifers and deciduous trees of the species previously mentioned. During 1939 further uncountable seedling birch upsprung, and they now form a miniature forest amid the ground vegetation. The ground disturbance has also resulted in a chaos of vegetation of an intermixed character. With the expunging of the *Calluna* and bilberry, which were two of the dominant plants on this weathered sandstone plateau, *Deschampsia* has assumed control with *Galium saxatile* and *Anthoxanthum* controlling the sandy ridges by the pathway sides. Denuded of beech, oak, and sycamore, the other portions of this now open

ground is choked with *Epilobium angustifolium*. Crossing the Thunder-bridge road access is immediately gained to Joy Wood, where the xerophytic *Calluna*, *Erica cinerea*, and bilberry with *Deschampsia* entirely control the ground. This ground vegetation is doubtless indicative of the flora of Farnley Moor prior to its inclosure and allotment. In the autumn of 1939 splendid examples of beech and oak were felled in this wood. In one portion there is a thriving coniferous belt, a replacement after a fire some years ago.

No one appears to have come across *Aquilegia*. The writer can remember when it was a conspicuous plant near to the Broomstyle entry to the woods. Eleven plants of *Asplenium trichomanes* were noted in its known locality, and also a goodly growth of *Enanthe crocata* alongside the stream outside Clough Wood.

Mr. A. Thompson writes: The only sphagna I could find on June 1st on the Yorkshire Naturalists' Union outing were those near the stream below the 'fish-pond' in Storthes Hall Wood.

S. squarrosum Pers. var. *spectabile* Russ.

**S. inundatum* Russ. var. *lanceifolium* Warnst.

**S. auriculatum* Schp. var. *racemosum* Warnst.

**S. crassycladum* Warnst. var. *magnifolium* W. This plant was submerged in the water at the exit of the pond.

S. crassycladum W. var. *diversifolium* W.

Those with * are new records for V.C. 63.

The *Scapania* occurring in such large quantities on the stones in the stream was *Scapania undulata* (L.) Dum.

Birds.—Mr. Ralph Chislett writes: At Thunder Bridge the area investigated consisted of hillside woodlands, including some tall timber on the verge of parkland, some birch, bracken and heather areas, and some stretches of young conifers, mainly spruce. The only Woodpecker noted was the Great Spotted. Neither the Chiffchaff nor the Nightjar was in evidence, although mentioned on the Circular, but the males of two pairs of Redstarts were singing, together with numbers of Tree Pipits and Willow Warblers with a few Common Whitethroats and two Garden Warblers. The scarcity of Song Thrushes (only one was heard) was probably caused by the severe winter; Blackbirds were more numerous. A pair of Creepers were evidently nesting, but neither the Goldcrest nor the Common Wren were noted. Yellow Hammers were abundant in contrast with Austwick, where the species was not seen or heard during three days. Altogether twenty-seven species were identified, including one Jay. No evidence of any species of Owl was forthcoming, or of other birds of prey, but it is certain that repeated visits would enable the list of birds to be extended.

Entomology.—Mr. M. D. Barnes writes: COLEOPTERA.—In spite of the really excellent weather which we enjoyed on this excursion the insects encountered were not in anyway outstanding. Perhaps the most interesting beetle taken was captured by Mr. F. Stubbs. This insect, a variety of the Ladybird *Anatis ocellata* L., a specimen without a light ring round each spot, the feature from which the species derives its name.

The complete list of beetles, taken principally by Mr. E. G. Bayford, is as follows:

Nebria brevicollis (F.).

Pterostichus madidus (F.).

Agonum ruficornis (Goeze.).

Bembidion lampros (Hbst.).

Coccinella 7-punctata (L.).

C. 7-punctata ab. *maculosa* (Weise).

C. 10-punctata (L.).

Melanotus rufipes (Hbst.).

Athous haemorrhoidalis (F.).

Adrastus limbatus (F.).

Agriotes obscurus (L.).
Dolopius marginatus (L.).
Cantharis nigricans (Ml.).
C. pellucida (F.).
Rhagonycha pallida (F.).
R. limbata (Th.).

Lochmæa suturalis (Thoms.).
Strophosomus coryli (F.).
Apion cruentatum (Wa.).
Polydrosus tereticollis (De G.).
Pyllobius argentatus (L.).

LEPIDOPTERA.—Very little of interest was observed among the lepidoptera. Feeding among the young birch and trees were large numbers of the larvæ of *Hybernia defoliaria*, *H. marginaria*, *Chaematobia brumata* and *Phigalia pædaria*. Probably the most outstanding moths seen were the Green Silver Lines Moth (*Hylophila prasinana*) and the Bordered White Moth (*Bupalus piniaria*). The latter, which feeds exclusively on the Scotch pine, has probably established itself but recently following the replanting of large areas of the woods with conifers.

Complete list :

BUTTERFLIES.

Pieris rapae.
P. brassicae.

P. napi
Chrysophanus phlaeas.

MOTHS.

Hylophila prasinana.
Lozogramma petriaria.
Eulype hastata.
Cabera pusaria.
Cidaria corylata.

Xanthorhoe montanata.
X. fluctuata.
Bupalus piniaria.
Hepialus lupulina.
H. hecta.

HYMENOPTERA.—The sandy soil of the Storthes Hall Wood provides an excellent site in which many of the fossorial bees excavate their nests. The paths and bare patches of soil everywhere showed signs of the activity of these insects. The principal species observed at work were *Andrena cineraria* (L.) and *A. nitida* (Fourc.). In addition, two species of *Nomada*, bees parasitic on *Andrena*, were seen but could not be identified.

Diptera (C. A. Cheetham).—Some interesting species occurred among the two-winged flies caught on this occasion. Tipulids were plentiful, and one species, *Tipula truncorum* Mg., which was taken is a rare species that appears to have some connection with the Scots pine tree, the wood species *scripta* Mg. was plentiful, *vernalis* Mg. and *oleracea* L. were expected and found, as were the two very large species, *Maxima* Poda (*gigantea*) and *fulvipennis* Deg. (*lutescens*), and though *variipennis* Mg. was not unexpected the moorland species *alpium* Bergr. seemed out of place. The only black and yellow species seen was *Pachyrrhina maculata* Mg., but in the dark parts of the ditches the white tarsi of *Dolichopeza sylvicola* Curt. were often seen. Among the smaller species a small swarm of the rare *Ephelia mundata* Lw. (*miliaria*) was netted. Others of this group were *Rhipidia maculata* Mg., *Ormosia albitibia* Edw. and *Rhypholopus hæmorrhoidalis* Ztt. Among the fungus gnats *Neuratelia nemoralis* Mg. was most noticeable with *Boletina trivittata* Mg. Hoverflies were not plentiful, and the only *Chilosia* caught was *variabilis* Pz. Two species of *Pipunculus* were taken, *P. pratorum* Fln. and one which appears to be an addition to our lists but requires confirmation. An allied species also taken was *Chalarus spurius* Fal. Many other specimens require more study and must be left to a later note.

The Entomologist for June contains 'Eighteenth century records of Lepidoptera in Sussex,' by J. M. Baines; 'New records for Irish Lepidoptera,' by A. A. Lisney; 'Lepidoptera in the Scilly Isles in August, 1939,' by C. G. Clutterbuck; 'Some species and races of *Rhopalocera*,' described by H. C. Lang; 'An instance of spiral segmentation in *Spilosoma menthastris* Esp.,' by E. Evans, and numerous notes and observations.

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YORKSHIRE NATURALISTS' UNION

BOTANICAL SECTION

THE Annual Meeting will be held in the Botany Common Room at Leeds University on Saturday, October 5th, 1940, at 2 p.m. Business: Annual reports and suggestions for officials and committee members for 1941.

CONCHOLOGICAL SECTION

THIS section will meet at Geology House, Leeds University, on Saturday, October 26th, at 2-30 p.m. for the Annual Meeting.

GEOLOGICAL SECTION

THE Annual Meeting of this Section will be held in the Geological Department, Leeds University, on Saturday, October 26th, at 3-15 p.m. to consider the annual report and suggest names of officials and committee for 1941.

FRESHWATER BIOLOGY COMMITTEE

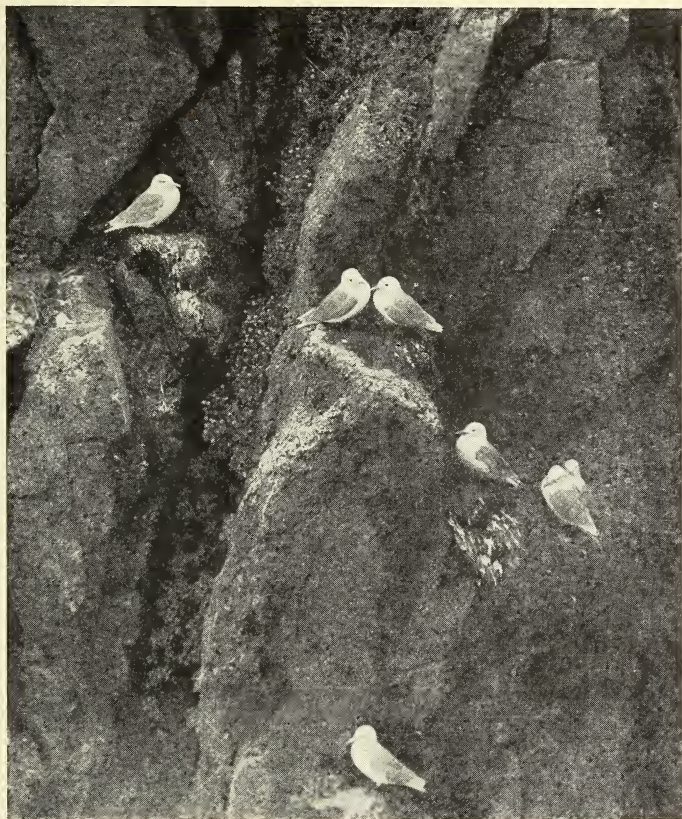
THE Annual Meeting will be held in Bradford, December 7th, prior to the Annual Meeting of the Union.

BIRDS OF BEMPTON CLIFFS

A brief survey extending from Flamborough Head to Bempton End,
May 31st, June 1st and 2nd, 1940

W. W. NICHOLAS, F.R.P.S.

It is about twenty-five years since I last fully covered the present ground and, although local inspections during inter-



vening years had prepared me for changes, I was somewhat surprised at the state of affairs over the whole area.

Perhaps the feature that impressed me most was the number of unoccupied ledges which formerly were packed with guillemots. This remark applies principally to upper and mid-way ledges, but numerous lower ledges also were unoccupied.

With this great decrease in the number of Guillemots, there has been a considerable increase in the number of

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Kittiwakes, but by no means do the latter fully occupy, if at all, the ledges formerly used by the Guillemots. This point is of interest because it has been claimed that the decrease in numbers of Guillemots is 'obviously due to the increase in numbers of Kittiwakes'—a claim which at Bempton is readily seen to be inaccurate.

This claim was made by Mr. F. C. R. Jourdain in a letter to *Field* last year, in which he strove in vain to 'whitewash' egg collectors.

Observation at Bempton and other localities shows that the kind of site preferred by each species varies considerably—Guillemots seem to prefer long ledges, where from six to twenty or more may be packed close together. Kittiwakes, on the other hand, seem to resent quite such close association with their own kind and choose irregular and more scattered ledges, many of which are only rendered tenable by the addition of the mud nest.

These ledges, or series of ledges, often form a line across the cliff face, sometimes horizontally, but not infrequently diagonally, as shown in the accompanying photograph.

Another point of interest is that, although my glasses were brought to bear upon every bird possible, not one 'spectacled' or bridled Guillemot was observed. The cliffs never were strongly represented by this variety, so far as I am able to trace.

RAZORBILLS.—There does not seem to be so noticeable a reduction in the numbers of these birds, which are fairly well distributed along the whole range when suitable. Indeed, on several of the cliff faces they were quite as numerous as Guillemots, whereas formerly they were greatly outnumbered by the Guillemots.

PUFFINS.—Seem to be holding their own fairly well, and are more numerous in the Flamborough area than at Bempton.

HERRING GULLS.—A steady increase in numbers was noted, in spite of efforts to keep them in check. Colonies of eight to ten pairs, some with eggs and some with young, were noted in several places, i.e. Gull Nook, near Cat Nab, and near Breil Point, while many more range the cliffs or congregate in groups of six or a dozen upon the water.

FULMAR PETREL.—By comparison with former years few were seen. Indeed, along the whole line of cliffs traversed (about five miles) not more than twenty birds were seen during the three days. Of these, one solitary bird occupied a nesting site (a hole in the upper clay cliff near Breil point), three more vied with each other for possession of a grassy slope near Cradle Head, two others were similarly engaged near Cat Nab,

while the remainder were seen on the wing at various points. A very poor show indeed, when compared with former years, and it would be interesting to know whether I struck a bad period for my visit or whether my observations really represent a falling off in numbers.

JACKDAWS.—Seem to be steadily increasing. Numbers were observed feeding in the fields and then flying over the cliff to their nesting holes below.

CARRION CROWS.—A few were seen and heard.

DOVES.—Several parties of both Rock Doves and Stock Doves were seen, but I am unable to form an opinion comparatively with former years as to numbers.

GANNET.—I saw nothing of this species on the wing, and from the cliff top was unable to observe the ledges where they nested last year. I understand that these can only be viewed from the sea, and no boat was available.

BLACK GUILLEMOT.—None were seen.

CORMORANTS.—Were observed upon several occasions, usually in flight.

PEREGRINE FALCON.—Was neither seen nor heard.

KESTREL.—One female observed on the wing.

PIPITS.—Both Rock and Meadow, were observed in about their usual numbers.

HOUSE MARTINS.—Were observed, particularly at North Landing, where they seem to have forsaken their former ground on the East Cliff and to be occupying small caves and recesses on the west side.

In conclusion, I would add that I saw no evidence of the egg collectors, and the cliffs inspected were in their undisturbed state and therefore representative of the birds in their present natural state. I gathered from a Coast Guard, however, that a gang of climbers were working the distant Buckton and Speeton cliffs.

A NORTH LANCASHIRE MOSS

SYDNEY MOORHOUSE

THE recent announcement that Leighton Moss, that area of marshland and small lakes between Carnforth and Silverdale, North Lancashire, is to be reclaimed and used for agriculture, is specially interesting because such a scheme, if carried out, would restore a condition that existed right until the closing years of the Four Years' War.

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Then, the land that now comprises one of the finest haunts of wildfowl in the north-west was used for agricultural purposes. A steam pump was housed in a building near the edge of the seashore, and further drainage was effected by means of a main dyke and two catch dykes. Pumping, however, ceased in the autumn of 1918, and soon no less than 325 acres were under water.

Since that time Leighton Moss has been used solely for wildfowling purposes, a keeper having been in residence there.

During the past twenty years Leighton Moss has afforded naturalists and ornithologists with a great many opportunities for study, and in the now defunct *Lancashire and Cheshire Naturalist* (Vol. XVII) Mr. H. W. Robinson lists forty-one birds as having been seen there. His list comprised: Mute Swan, Grey-lag Goose, White-fronted Goose, Shelduck, Wigeon, Mallard, Teal, Pintail, Shoveller, Tufted Duck, Pochard, Goldeneye, Coot, Moorhen, Little Grebe, Heron, Lapwing, Curlew, Redshank, Common Gull, Herring Gull, Bean Goose, Pink-footed Goose, Water Rail, Great Crested Grebe, Bittern, Common Snipe, Golden Plover, Ringed Plover, Common Sandpiper, Dunlin, Black-headed Gull, Lesser Black-backed Gull, Greater Black-backed Gull, Common Tern, Kingfisher, Gadwall, Scaup, Jack Snipe, Spotted Crake and Black Tern.

In the Lancashire and Cheshire Fauna Committee's 1938 Report, Captain A. W. Boyd has a note (regarding the B.T.O. 1938 study of the Reed-warbler) that he heard of Reed-warbler singing in a reed-bed here in 1923; and in the previous year's report, when enquiries were made into the distribution of the Chiff-chaff in Lancashire and Westmorland, Dr. M. S. Wood notes that two pairs nest annually at Leighton Moss. It was further reported that this bird 'has a fair hold in the north of the county near Silverdale and that its range extends through Westmorland into Cumberland.'

In 1919 or 1920 the Black-headed Gull attempted to establish a colony at Leighton Moss, but the eggs have all been destroyed in recent years.

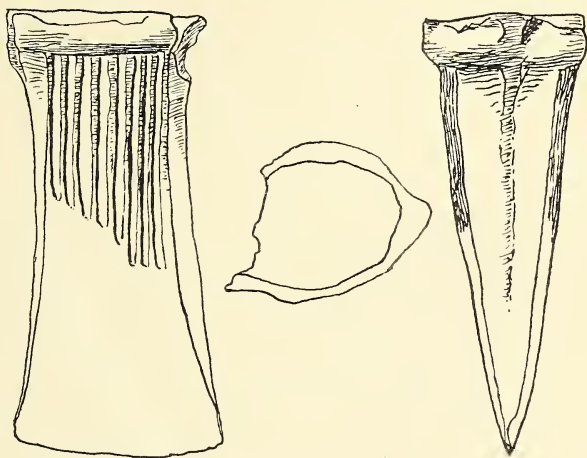
With regard to this year's British Trust for Ornithology's choice of the Teal for selected study, my colleague, Mr. A. N. Sharp, tells me that he found a pair nesting at Leighton in 1936.

During the autumn and winter months large gaggles of Grey-lag Geese are common at Leighton, and it is interesting to note that prior to the 1922-1923 winter the Pink-foot was the commonest wild goose of the Morecambe Bay marshlands, with the exception of the 1908-9 season, when the White-fronted Goose predominated.

RARE TYPE OF BRONZE AGE IMPLEMENT

T. SHEPPARD

By an exchange, an addition has been made to the collection of about 200 bronze implements now in the Mortimer Museum at Hull, which is of a type not previously represented. The specimen is labelled 'Long Melford, Suffolk,' and seems to be different in decoration from anything in Evans' 'Ancient Bronze Implements,' 1881. The question arises as to whether it is a chisel or a socketed axe: personally I am inclined to



Bronze Chisel from Long Melford. 1/20 actual size.

think either that it is a chisel, or if it was used as an axe, it never had a loop.

The British Museum have kindly examined this and made a record for their collection of drawings and details of bronze axes found in Great Britain, and from their drawing we have made the block reproduced herewith. In view of the excellent description given by the British Museum, we give it below: Length 86 mm. Width 40 mm. Thickness 33 mm. Weight 167 grams.

Composition.—Cutting edge wavy and irregular. On each face are seven slight ribs, formed by parallel shallow grooves, which are of varying length, so that the terminals of the ribs run diagonally across the faces of the blade; on one side, the butt is missing. There is no sign of a loop, and the missing part is so small that a loop could hardly have been placed there. The implement is therefore rather a large socketed chisel than an axe. But not necessarily.

Surface.—Smooth.

Patina.—Smooth green patina partly rubbed off on one face, showing bronze below. The mouth hammered down flat: this surface scarcely patinated and recent.

In returning the specimen, Mr. C. F. C. Hawkes, of the British Museum, writes:

‘I have come to the conclusion that there never was a loop: if so, the lower part of it would be bound to show, unless it was impossibly small or sprang directly from the lip-moulding of the implement instead of from below it. One may call it a chisel, in the sense of Evans’ *Ancient British Implements*, pp. 133-4, i.e. in this case not quite necessarily, as only the lack of loop distinguishes its form from that of an ordinary socketed axe (unlike Evans’ Figs. 159, 160, 165).

Of this type of axe Evans states: “The next class of socketed celts which has to be noticed, consists of those in which the loop is absent. No doubt, in some cases, this absence arises either from defective casting, or from the loop having been accidentally broken off, and all traces of it removed; but in many instances it is evident that the tools were cast purposely without a loop. It seems probable that many of them were intended for use as chisels, and not like the looped kinds as axes or hatchets. The similarity between the looped and the loopless varieties is so great that I have thought it best to describe some of the instruments which may be regarded as undoubtedly chisels in this place rather than in the chapter devoted to chisels, in which, however, such of the socketed kinds as are narrow at the edge, and do not expand like the common forms of celt, will be found described. The small tool shown in Fig. 159 may safely be regarded as a chisel. It does not show the slightest trace of ever having been intended to have a loop, and is indeed too light for a hatchet. It was found with a tanged chisel, a hammer, numerous socketed celts, and other articles, in the Hoard from Reach Fen, Cambridge. I have seen another $2\frac{1}{8}$ in. long, with a somewhat oval socket and no loop, which was found in Mildenhall Fen, and was in the collection of the Rev. S. Banks, of Cottenham. A longer celt of the same character is engraved by Dr. Plot. It was sent to him by Charles Cotton, Esq., and according to Plot ‘seems to have been the head of a Roman rest used to support the lituus, the trombe-torte, crooked trumpet, or horne pipe used in the Roman armies.’ Another of nearly the same form was found on Meon Hill, near Camden, Gloucestershire. A celt or chisel of this character found at Düren, in North Brabant, is in the Museum at Leyden. Another was found at Zaborowo, in Posen, in a sepulchral urn.

“A celt of the octagonal form of section, and without a loop is shown in Fig. 160. It formed part of the great hoard

found at Carlton Rode, near Attleborough, Norfolk. The joint marks of the moulds are still very distinct upon the sides. This specimen is in the Norwich Museum. A nearly similar Scottish celt is shown in Fig. 165, from Bell's Mills. This is of the variety without the loop, and closely resembles that from the Carlton Rode hoard, Fig. 160, the main difference being that the neck is of decagonal instead of octagonal section. One of hexagonal section and socket from a hoard found on Earsley Common, Yorkshire, in 1735, is engraved as having no loop. Celts without loops are not uncommon in France, and are often found of small size in Denmark."'

NARWHAL TUSKS

T. SHEPPARD

IN *The Naturalist* for January, 1937, is an account of various Narwhal skulls with two tusks, and, in addition, the largest tusk in the Hull Collection, presented to us by the late W. H. St. Quintin, which is 8 ft. 6 in. long, though there are several smaller. At that time it was thought that 8½ ft. was a good length for a narwhal 'horn.'

In reading Mr. P. Shaw Jeffrey's *Whitby Lore and Legend*¹ recently, I was interested in the following (p. 103): 'Indirectly the alum works were the means of initiating shipbuilding in Whitby, for the works required coal, and to meet the demand a small fleet of coasting ships was bought, and these developed in course of time a regular coasting trade, going even as far as London . . . In twenty or thirty years time, by a resort of several ships-carpenters to the town, the inhabitants were enabled to build new ships at the port of Whitby, with the oak timber which was then very plentiful and very cheap in its neighbourhood. Whitby was now definitely established as a port, shipbuilding began, and with the allied trades of sail and rope making, it became a busy and prosperous place. A century later, the whale fishery in Greenland and Davis Straits gave a great impetus to its shipping and trade and great boiler houses were built alongside the inner harbour where the gasworks now are, and here the blubber was rendered down into oil and the refuse converted into manure, distilling a perfume which turned strong men pale and made brave men weep. From first to last, 53 vessels were employed in this trade, and the number of whales brought to Whitby in the 50 years from 1766 to 1816 inclusive amounted to 2,761, besides about 25,000 seals, 55 bears, 43

¹ Whitby: Horne & Son, Ltd., 1923, 223 pp.

unicorns and 64 sea-horses (walrus?). The "unicorns" were doubtless narwhals, and in the dining room of Airy Hill, once occupied by William Moorsom, C.B., Admiral of the Blue, a contemporary of Nelson, and in command of the *Revenge* at the Battle of Trafalgar, and now in the occupation of Mr. Thos. Turnbull, J.P., are to be seen 10 or 12 magnificent narwhal horns, built into two pillars and fully 10 feet in length. These, doubtless, were some of the spoils of the whale fishery, and were evidently specially selected, as they are very much finer than any of the ordinary specimens one sees in museums.'

Such a record seemed so remarkable that I wrote to Mr. Turnbull, who replies: 'I am afraid Mr. Shaw Jeffrey has been a little inexact about my narwhal tusks. I have eight specimens. They all measure seven foot three inches. This similarity in length is attributable to the fact that they were trimmed to fit the columns of an arch in the dining room of this house, long before my time. Before this trimming they may have been about eight feet; they certainly were never anything like ten feet in length.' Mr. Turnbull adds: 'I have just seen a narwhal tusk at the Whitby Museum which I measured to be 9 ft. 1 in. in length. I have never seen a longer one than this.' Neither have I.

I then wrote to Mr. F. M. Sutcliffe, Curator of the Whitby Museum, with regard to the specimen he had there, and he replies: 'I have just measured the longest narwhal tusk here; it is 8 ft. 10 in. The point seems to have been broken off, so it may have measured 9 ft. 1 in. when it was down at the old museum on the pier.'¹

An excellent photograph of old Whitby interest showing a shed supported entirely by whale jaws, appeared in *The Naturalist* for August, 1930, and was reprinted in *Hull Museum Publication* No. 169.

With regard to the records of narwhal tusks, I have enquired at the British Museum (Natural History), and Dr. F. C. Fraser, of the Department of Zoology, informs me that the narwhal tusks on exhibition in the Whale Hall there measure 8 ft. 10 $\frac{3}{4}$ in., 8 ft. 10 $\frac{1}{2}$ in., 8 ft. 5 in., and 7 ft. 4 in., with weights 15, 13, 18 and 10 lb. respectively.

In the seventh edition of Rowland Ward's *Big Game Records*, 1914, the largest tusks are given as (1) 9 ft. 4 $\frac{1}{2}$ in., (2) 8 ft. 8 $\frac{1}{4}$ in., (3) 8 ft. 7 $\frac{3}{4}$ in., (4, 5, and 6) 8 ft. 7 in., (7) 8 ft. 3 $\frac{1}{4}$ in., (8) 8 ft. 2 in., (9) 8 ft. Number 1 is given as in the possession of a Major H. A. Steward; and Nos. 2 and 4 are in the Bethnal Green Museum.

¹ This is possibly the one referred to by Scoresby in his *Journal* (p. 132) which measured 8 ft. 9 ins. or 8 ft. 10 ins. in length.

I wrote to Messrs. Rowland Ward, Ltd., to ascertain if they could verify the measurement of the specimen 9 ft. 4½ in. in the possession of Major Steward, but they replied they were unable to trace the present whereabouts of the tusk.

Mr. R. W. Gray informs me that his grandfather brought a very fine example, 8 ft. 2 in. long, from the Davis Straits, and this is now in the Arbuthnot Museum, Peterhead. He considers that Hull is fortunate in possessing one 8½ ft. in length.

The longest narwhal tusk in the Hull Trinity House at Hull measures 8 ft. 9 in., and there is also a fine pair of these tusks at the entrance to the Board Room of the Trinity House, which are looked upon as semi-official staves.

In our Museum of Fisheries and Shipping, besides the specimens already recorded, there is a pair of tusks mounted on square pieces of wood which originally were for a four-poster bedstead, said to have belonged to John Wesley. There are two hat-and-coat stands from local mansions, the tusks being the centre-piece. We have a fine pair with brass supports and mounts which formerly decorated the house of an old Hull sea captain, and a number of walking sticks.

Narwhal tusk in the old days fetched good prices on account of its hardness and superiority to elephant ivory, and consequently narwhal ivory was used for the earliest false teeth made, some interesting examples of which are in the Hull Museum.

The Transactions of the Society for British Entomology, Vol. 7, Part 2, consists of a very able 'Synopsis of the British Psychodidæ (Dipt.) with descriptions of new Species,' by the late A. L. Tonnoir. This is based on a revision of the collection of the Rev. A. E. Eaton. North of England records are *Pericoma avicularia* Tonn., Bolton, Lancs. (H. Britten), Colne, Lancs. (H. Britten); *Telmatoscopus britteni* Tonn., Madeley, Staffs. (H. Britten); *T. andrenipes* Strobl., Cotterill Clough, Cheshire (H. Britten); *Psychoda spreta* Tonn., Windermere (F. W. Edwards).

Vol. 7, Part 3, consists of a 'Synopsis of the British Nemouridæ (Plecoptera),' by D. E. Kimmins. North of England species are *Protonemura meyeri*, Nottinghamshire, Derbyshire, Cheshire, Lancashire, Yorkshire, Durham; *P. praecox*, Derbyshire, Cheshire, Lancashire, Yorkshire; *Amphinemura cinerea*, Nottinghamshire, Derbyshire, Yorkshire, Durham, Cumberland, Westmorland; *A. standfussi*, Nottinghamshire; *Nemoura variegata*, Nottinghamshire, Derbyshire, Cheshire, Yorkshire, Westmorland; *N. erratica*, Nottinghamshire, Derbyshire, Cheshire, Lancashire, Yorkshire, Northumberland, Westmorland; *N. cambrica*, Derbyshire, Yorkshire, Cumberland, Westmorland; *N. avicularis*, Derbyshire, Lancashire, Yorkshire, Northumberland, Cumberland, Westmorland; *Nemurella inconspicua*, Nottinghamshire, Derbyshire, Cheshire, Lancashire, Yorkshire, Westmorland.

The Entomologist for July contains 'Some Notes on the Cynipid genus *Diplolepis*,' by M. Niblett; 'New Records for Irish Lepidoptera,' by A. A. Lisney; 'Observations on *Lasiocampa quercus* with special reference to Pupation,' by L. G. Hulls; 'Notes on Oriental *Theclinae*—a Correction,' by N. D. Riley; and numerous notes and observations.

CORRESPONDENCE

BOLTON HALL,
DANBY-IN-CLEVELAND,
YORKSHIRE.

To the Editor of *The Naturalist*.

DEAR SIR,

When an old stone field-drain on this property was opened up this spring by the staff of my home farm to clear away obstructions, I noticed in a patch of clayey soil just above the drain, 3 ft. below the arable surface, a small boulder of typical glacial form, with two flattened surfaces, and obviously no local rock. The field edge where it was found lies some hundred yards south of Bolton Hall, about on the 700 ft. contour, and is remote from any road on which beach gravel, which might contain such an erratic, has ever been used. I sent a chip from the rock to Dr. J. E. Hemingway at Leeds, and he identifies it as a coarse greywacke, presumably from the Scottish Southern Uplands, and he agrees with my surmise that it must have been rafted across Lake Eskdale to the southern end of Danbydale from the outfall of glacial material between Danby and Castleton. I understand from Dr. Hemingway that evidence of such rafted material in Lake Eskdale and its branches has hitherto been lacking. This note may therefore be of interest.

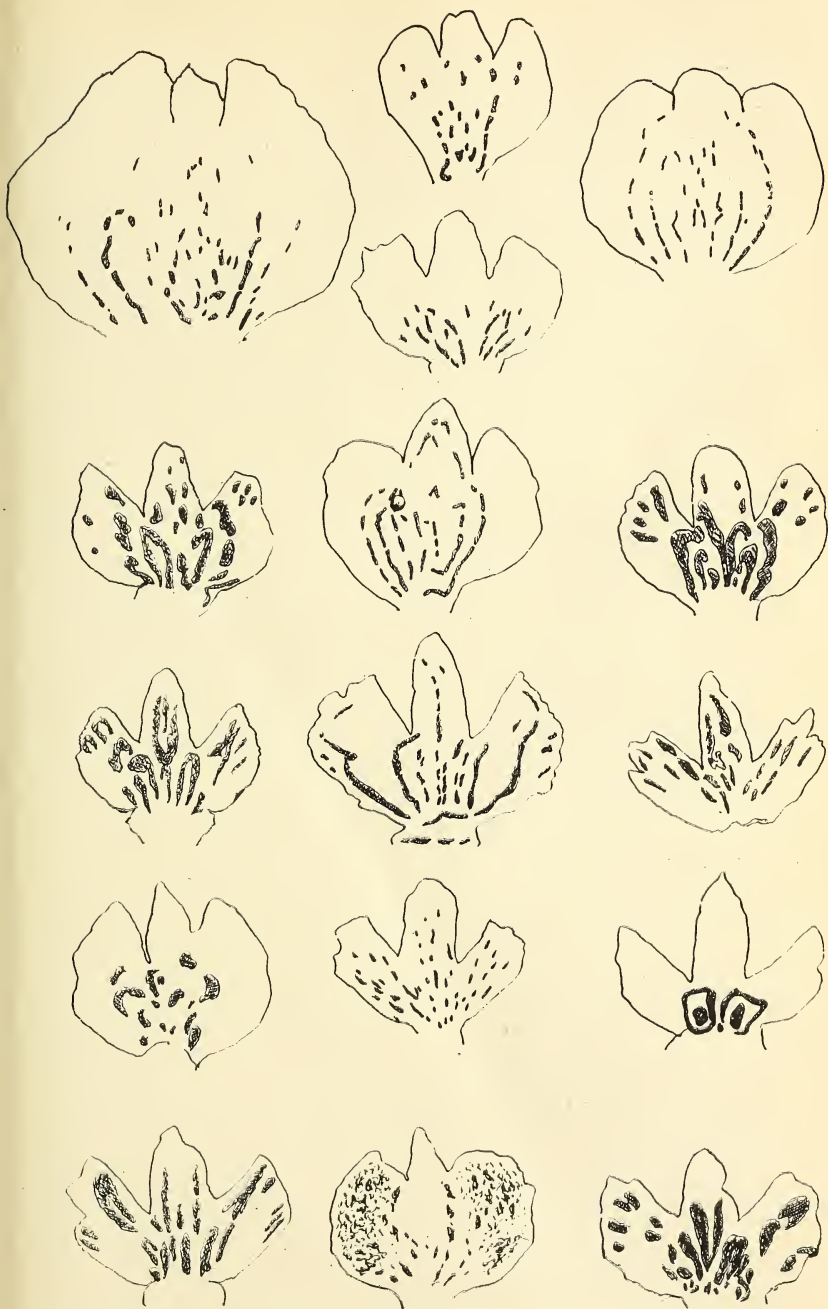
Yours faithfully,

W. E. F. MACMILLAN.

SOME VARIATIONS OF THE LIP OF THE SPOTTED ORCHID

CHRIS. A. CHEETHAM

At the Redmire excursion (July 6th) attention was drawn to the variation of the Spotted Orchid; here, as occasionally elsewhere, a very definite set of patterns was found. These occur in a similar way in restricted areas in other districts, beyond which the species seems more definitely of one pattern, and on returning home I thought I would make *camera lucida* drawings of these variations, but, unfortunately, I was too late. I then decided to get drawings of the normal form. To do this I went to a roadside where I always expect to find the normal form. I soon found that though the plants looked much alike in the mass there was no definite pattern to be taken as a type. It will be seen that the shape of the lip varies quite as much as the spotting. These specimens were all gathered on the roadside between Keasden and the Green Smithy on the Giggleswick and Wray highroad. I have also added four sketches of the broad-lipped marsh form from Austwick Moss. These vary more in size than pattern, but I avoided specimens which are usually considered to be hybrids with the Marsh Orchid.



THE PREDECESSORS OF *THE NATURALIST*

A Critical Survey

UNTIL December, 1897, which brought the twenty-second volume to a close, each monthly part of *The Naturalist* was numbered consecutively from the first number onwards; consequently that part bore the number 269 ($22 \times 12 + 5$). The next monthly part (January, 1898), the beginning of a new volume, bore a dual numbering—492 in heavy type and 270 in finer, smaller type. This change was made without any explanation, and the omission is the more remarkable, because on page 4 is an editorial note dealing with a kindred matter: 'We have transferred the printing of our journal to a new firm, in reality old friends under a new name, and have delayed the appearance of the present number in order to select a new type and paper more suitable for printing illustrations.'

Although no explanation was given at the time, some earlier notes may be said to have prepared the way for the innovation. In the preface to the volume for 1894 it is claimed that *The Naturalist* is 'a journal which has existed at various times ever since 1836,' and proceeds to describe the four series hereafter referred to as II, III, V and VII.

Three years later, in the preface to the volume for 1897, a claim is made to greater antiquity, thus: *The Naturalist* is 'one of the oldest natural history journals in the Kingdom, dating back, as it does, to the year 1833.' No further particulars are given, but the allusion is to No. 1. In 1903 this claim appears to have been forgotten, for on p. 1 of that year we read: '*The Naturalist* . . . can be said to have existed with slight breaks for nearly seventy years,' and gives its story as in 1894 almost verbatim.

The next tabulation was given in 'Salient Features in the History of the Yorkshire Naturalists' Union, being the Presidential Address delivered at Sheffield, 29th January, 1904, by W. Denison Roebuck, F.L.S.' This was issued in pamphlet form the same year, and later in Part 35 of the Transactions of the Yorkshire Naturalists' Union. The series given here are I, II, III, V, VI and VII.

The final enumeration will be found in 'Yorkshire's Contribution to Science' (*The Naturalist*, 1915, pp. 17-25, 71-77, 109-114, 131-138, and extended to a volume with the same title published in 1916). This was the Presidential Address to the Yorkshire Naturalists' Union delivered at Leeds, 5th December, 1914, by T. Sheppard, F.G.S.

Mr. Sheppard made a careful examination of the different magazines concerned, and in the following remarks, with some exceptions, I have been content to accept his conclusions. To avoid circumlocution the Roman numerals I to VII are used to denote the different magazines listed by Mr. Sheppard, while Mr. Roebuck's exact words are given in quotation marks.

'*The Naturalist*, a monthly journal of natural history, which is our organ, is one of the oldest scientific journals. *It dates back to 1833, and although there are several series and intervals of time between them, there has always been a connecting link, a transfer of title and of copyright sufficient to enable us to regard the journal as a continuous whole.*' I have italicised this passage, because the conclusions here set forth are the direct contrary to the statements it contains.

(I).—'The first series was one of twelve¹ numbers published in 1833, under the title of *The Field Naturalist* and the editorship of Prof. James Rennie.'

¹ Mr. Sheppard points out that there were sixteen monthly issues. This publication may be dismissed in a few words. It was a magazine designed to serve the whole country, and therefore quite different from our own, which was at first intended to supply the needs of the W.R.C.N.S., and later the Y.N.U. and the northern counties of England.

(II).—'The second series began in October, 1836, and was simply *The Naturalist*. Its first editors were B. Maund and W. Holl. With the second volume it became distinctly a Yorkshire publication under the editorship of Neville Wood, of Campsall, near Doncaster, when the series ran to its fifth volume and ended with the year 1839.'

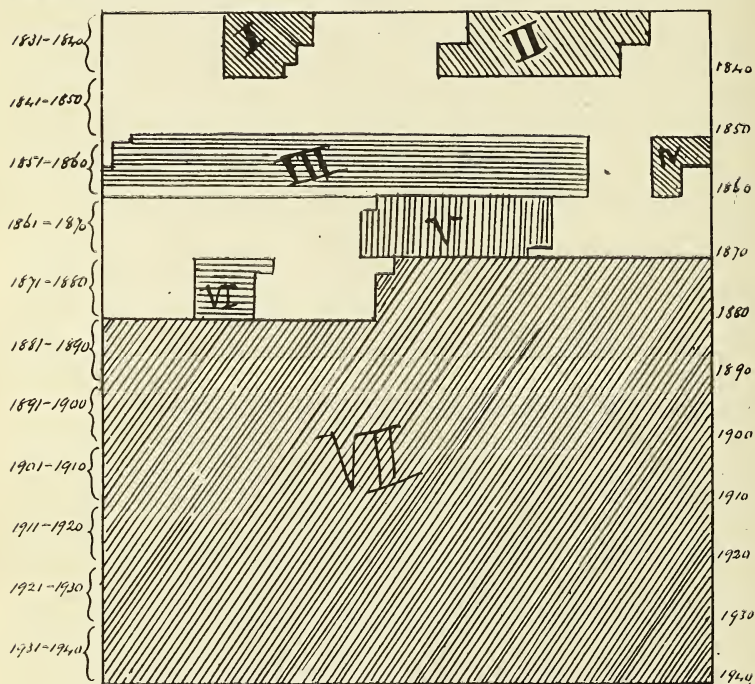
(III).—'The journal now remained in abeyance² for about eleven years, when the title and copyright were transferred to a new series edited by Beverley R. Morris, and afterwards by the Rev. F. O. Morris, both of whom had been actively concerned in the preceding series. This series was one of eight volumes which appeared in the years 1851 to 1858.'

² 'Abeyance' is far from being the right word. The former magazine was not dormant; it had ceased to exist.

(IV).—Mr. Sheppard interpolates here *The Magazine of Natural History and Naturalist*, conducted by F. O. Morris, and published in London in 1860. Nos. 1-9 appeared. Evidently Mr. Roebuck was not aware of this attempt to establish a new magazine. Mr. Sheppard states that there were 36 monthly issues of II, and implies that there were 96 of III, whereas 94 is the correct number.

II, III and IV, like I, were intended to cover the whole country, and it is remarkable how large a proportion of their contents come from Edinburgh and the South of England. The fact that three of their editors were living in Yorkshire, and, for convenience, had their magazines printed in the county, does not entitle them to be called Yorkshire or North of England magazines. They were publishers' ventures, and each and every one of them died an early death, the longest liver attaining the age of seven years and ten months.

(V).—'It was now that our own Union—then the West Riding Consolidated Naturalists' Society—appeared on the scene. It had no sooner established its own existence than at its second meeting it discussed the need for a periodical, and a resolution was passed that one be established under its auspices, and eventually, in 1864, a new (fourth) series of *The Naturalist* was commenced³ and printed at Huddersfield.



The title and copyright were transferred to this by the Rev. F. O. Morris.⁴ This series, every number and volume of which⁵ bore the sub-title 'Journal of the West Riding Consolidated Naturalists' Society,' and edited by Messrs. George Tindall and C. P. Hobkirk, lasted for two volumes, and an incomplete volume⁶ from May, 1864, until it collapsed with the number for May, 1867,⁷ from want of adequate support.'

³ The incautious reader might be excused for thinking that this sentence referred to one transaction only, viz., the establishing of *The Naturalist*. Really it confuses two. On the 1st June, 1862, it was decided 'that a journal be established,' and the Secretary was instructed to write to Mr. H. T. Stainton, of London, on the subject, and report at a future meeting. At the next meeting (7th September) a letter from Mr. Stainton, the editor of *The Weekly Entomologist*, was read, offering the services of his paper, which offer was accepted. This paper came to an end in November, 1863. Its demise was reported to the Society at its meeting on the 13th March, 1864, and

at the following meeting (3rd April) 'the subject of establishing a periodical in connection with this Society was again introduced and decided to be carried out, Messrs. G. Tindall and G. H. Parker taking the entire responsibility of publishing the same, and the Consolidated Society guaranteeing a certain number of copies.' The result was the issue of the first number of *The Naturalist* on 2nd May, 1864.

⁴ Whatever Mr. Roebuck may have meant by the transference of title and copyright it is impossible that the expression can have the meaning usually attached to it. There can be no copyright of any publication that is definitely and decidedly dead; neither can there be an exclusive and perpetual right to a title which is a very ordinary English word. Furthermore, it is to be noted that in making their bow to the public, none of the editors makes claim to any such succession. If any such transference took place, they placed no value upon it, and deemed it unworthy of mention. On the contrary, Messrs. Tindall and Hobkirk claimed to fill the place formerly occupied successively by *The Entomologists' Weekly Intelligencer* and *The Weekly Entomologist*, and proceed: 'Although the two former Entomological periodicals failed through lack of sympathy and encouragement on the part of those who ought to have been contributors to their pages, there is reason to believe that a magazine conducted on similar principles, but on the more extended basis of Natural History in the widest signification of the term . . . would have a better chance of success, and it is in order to put this to the test that *The Naturalist* has been projected.' *The Yorkshire Naturalists' Recorder*, in like manner, makes no claim to be related to *The Naturalist*, dead five years. The same thing is plain in 'The Address' with which this magazine was prefaced in August, 1875. We learn from the postscript that it was their intention until the last moment to call the new venture *The Yorkshire Naturalist*; others persuaded them to call it *The Naturalist*. That being so, as one of the Editors had been an editor of V, 1864-7, it was only fitting that N.S. (New Series) should be added.

⁵ This is correct so far only as the first two volumes are concerned. Those of the third volume have *The Naturalist and Field Club Journal* on the cover. For some reason, not apparent, *The Naturalist* and the W.R.C.N.S. seem to have fallen foul of each other, for, except on the title-page the second volume has not a single reference to the W.R.C.N.S. or its activities; the societies at Huddersfield and Wakefield are the only West Riding Yorkshire ones mentioned. Quite one-half of the volume pertains to the South of England.

⁶ As Mr. Sheppard points out, this is not correct, but it seems to have escaped his notice that for the first two years this magazine was issued twice monthly. Hence each yearly volume consists of 24 parts. With No. 49, May 1st, 1867, a loose slip was inserted: 'Notice—*The Naturalist* will in future be published on the 1st of each month only. Price 3d. With double number when necessary.' This part consists of eight pages, the rest have 16 each, which accounts for this volume having but 184 pages ($16 \times 11 + 8$).

⁷ The final number was that for April, 1867. This error no doubt arose from the statement, repeated on each of the three title-pages 'May, 186- to May, 186-', instead of 'May, 186- to April, 186-'.

(VI).—'The next (or fifth series) was called *The Yorkshire Naturalists' Recorder, Journal of the West Riding Consolidated Naturalists' Society*, and lasted a year. It was printed, published and edited at Heckmondwike,⁸ July, 1872, to August, 1873.'

⁸ Mr. Sheppard points out that this is presumably an error for

Wakefield, but the error had already been corrected by Mr. Roebuck in his address reprinted in Part 35, *Trans. Y.N.U.*

(VII).—Mr. Roebuck follows with the founding of our Magazine. This was fully dealt with last month. He, however, commences another series with Volume X, an altogether unnecessary procedure. The difference between the number in heavy type and that in smaller type is 222 (492-270), which, it is presumed, represents the total issues of the five earlier magazines known to Mr. Roebuck, although how it is arrived at I have not been able so far to find out.

ISSUES OF I—VI

	W.D.R.	T.S.	E.G.B.
I	12	16	16
II	? ¹	36	36
III	96	96	94
IV	— ²	9	9
V	? ¹	36	60
VI	14	14	14

207 229

¹ No clear indication of number of issues.

² Not known to him.

Interval of time between—				Yrs.	Mths.
Death of I and Birth of II				2	5
"	II	"	"	II	5
"	III	"	"	IV	.
"	IV	"	"	V	3
"	V	"	"	VI	5
"	VI	"	"	VII	1
				25	6

These are alluded to in 1903 as slight (!!) breaks.

Life-time of I		I	4
"	II	3	.
"	III	7	10
"	IV	.	9
"	V	3	.
"	VI	1	2
		17	1

In other words, these six magazines covered 17 years, 1 month, out of a period of 42 years and 7 months.

A perusal of these tables provides a clear contradiction of the italicised clause above, and is sufficient proof that, although there are several series, they are separate and distinct from each other, and that they are not continuous nor make a whole.

That there are to be found connecting links is quite true, but they are external and not between magazine and magazine.

I is altogether distinct and unconnected with the rest.

II, III and IV are connected by reason of a common publisher.

V, VI and VII are connected by reason of a common patron, i.e., the W.R.C.N.S. and the Y.N.U.

It is satisfactory to know that the system of numbering will disappear henceforth. It serves no useful purpose, and is therefore unnecessary. No one, in quoting *The Naturalist*, would give its monthly number; it is sufficient to give the year-volume, and the page; e.g. *The Naturalist* for 1886, p. 9.

Our magazine has had a long and distinguished career, and gives promise of a lengthy vitality. It does not require bolstering up with a pedigree which is wholly fictitious.

E. G. BAYFORD.

BRITISH ABERRATIONS OF *RHAGIUM* *BIFASCIATUM* F.

E. G. BAYFORD

THE addition to the number of these brought forward is very interesting. *R. bifasciatum* F. is a landmark in my entomological career, for it was the sight of a specimen on the bole of an oak on the morning of May 24th, 1883, that made me a coleopterist. The question of the nomenclature of these aberrations is not so easily settled as Mr. Kaufmann appears to think. A study of the whole evidence will increase knowledge at the expense of confidence.

I have no wish to traverse the whole article, and on the general question think it sufficient to state that in the latest World Catalogue, by Aurivillius, 1912 (*Coleopterorum Catalogus*, Pars 39) eleven aberrations are given, of which number three had then been recorded for Great Britain; Mr. Kaufmann's record makes a fourth.

The following remarks are invited by the statement that 'British references to the existence of colour aberrations are "vague."' The earliest reference known to me dates back to 1801, when Vol. X of *The Natural History of British Insects*, by Edward Donovan, was published.

'*Leptura nigro-lineata* : nigro-aenea, elytris flavis : basi lineisque tribus longitudinalibus interruptis nigris. Marsh : MSS.

Very rare and curious species.

In the collection of Mr. Francillon.'

Plate 353, figure 1, is an excellent drawing of this striking aberration. Thomas Marsham, in his *Coleoptera Britannica* 1802, p. 343, refers to Donovan's figure, and repeats the description he had allowed that artist to publish.

J. F. Stephens, in his *Systematic Catalogue of British Insects* 1829, which is a model of what a catalogue should be, places it first, as the earliest recorded aberration of *R. bifasciatum*.

The second is *bimaculatum* Marsh, first described by him, *loc. cit* :

'nigra, elytris flavis basi atrocaeruleis : macula lunata marginalis ferruginea nigro-cincta.

In Mus D. Francis.'

Long Corp 9 lin.

This is the only aberration I possess. The specimen was formerly in the collection of William Talbot, of Wakefield (the virtual founder of The West Riding Consolidated Naturalists' Society, which evolved into the Yorkshire Naturalists' Union) and presumably is a Yorkshire specimen.

The third is *dorsalis* Marsh, described by him *loc. cit.* :

'nigra, elytris flavo-fasciatis : apice maculisque duabus marginalibus ferrugineis.

Long corp maris 8 lin.

" " foem 10 lin.

Capta prope Manchester. D. Phillips.'

Reference is made to Donovan, Vol. XI, 1806, Plate 395, fig. 1. This figure I have not seen. I do not possess the six supplementary volumes of this beautiful work.

These three aberrations are thus given by Stephens :

β. *nigro-lineata* Don. γ. *bimaculata* Marsh.

δ. *dorsalis* Marsh.

and in the latest catalogue by Aurivillius :

ab *bicolor* Ol. 1794 = $\left\{ \begin{array}{l} \textit{dorsale} \text{ Marsh 1802.} \\ \textit{Ecoffeti} \text{ Muls. 1839.} \\ \textit{ornatum} \text{ F. 1775.} \end{array} \right.$

ab. *bimaculatum* Marsh.

ab. *nigrolineatum* Don.

Since the publication in 1829 of Stephens' Catalogue, the names of these aberrations have had little or no use at the hands of British coleopterists, but the variations themselves have not been ignored ; e.g. apart from the summarised references given by Mr. Kaufmann, that by Stephens' *Illustrations of British Entomology*, Mandibulata Vol. IV, pp. 254-5 (Nov. 30, 1831) seems worth quoting :

'Extremely variable, the dark colour sometimes of a brassy tinge ; the elytra are occasionally yellow, with the base and three longitudinal interrupted lines black ; at others with the base bluish, with a lunate marginal ferruginous patch edged with black, and an oblong black streak on the suture towards the apex, again they are black at the base and apex with a large lunate yellow patch on each elytron on the back : the antennae are sometimes fuscous or black ; in some instances the lunules are obliterated.'

Here we have the three Latin descriptions of Marsham, translated by Stephens into one English sentence.

From these records it is clear that 'there are British references to the existence of colour variation' which are far from being 'vague,' and that Stephens was not 'the first to note that the elytral markings varied considerably.'

I have noticed that the brassy tinge is always present in specimens taken from their puparia, and judge that its absence is a sign of some days' emergence.

Another point worthy of consideration is the food of the larva. Most of the authorities I know give fir and pine trees. Personally I have had little opportunity for working among these, the bulk of my specimens having been taken from willows.

BIRDS IN THE GARDEN

WALTER GREAVES

PERHAPS this recital of incidents observed in my garden this year and last, will be of as much interest to readers as they were to me.

A pair of hedge sparrows made a nest in a bundle of upright twigs collected for pea supports, and on June 17th four young had hatched from the five eggs laid. From my place at the table at meal times I was able to watch the old birds as they approached and left. When the young were exactly a week old (June 24th) I had occasion to suspect that a house sparrow was paying some attention to them. (By this time the pleadings of the young, at each appearance of old birds with food, were audible inside the house.) I saw the house sparrow (a cock) drive one of the hedge sparrows away from the nest on several occasions, and, as I thought, give food to the young himself. To clear the matter up, I took up a position a few feet from the nest, and when I knew by the sounds made by the young that an old bird had returned with food, I suddenly placed myself close up and distinctly saw the cock sparrow feeding the young hedge sparrows. From then until June 27th, on which day the young, except one that fell out, left the nest, the young hedge sparrows were almost entirely brought up by house sparrows, both cock and hen. These house sparrows were followed about by a brood of their own, but on adopting the young hedge sparrows they fiercely attacked their own young when these demanded food. I was never able, though trying hard, to identify the nature of the food supplied to the hedge sparrows, nor could I be sure whether the house sparrows fed from the crop, or delivered the food just as it was brought. The house sparrows were model foster-parents, and the young hedge sparrows thrived so quickly that they left the nest when they were ten days old (June 27th). The cock house sparrow brought out the capsules containing the faeces and conveniently dropped them on a stone in the rockery. On no occasion did I see it attempt to swallow the capsule. After the adult hedge sparrows had been forced to capitulate, the cock frequently sang from the rigging of an adjoining house. The young hedge sparrows left the garden at once, and I am unable to say whether they were then taken in charge by their own parents or whether the house sparrows, which undoubtedly left the garden with them, continued to 'mother' them.

Last summer a pair of blackbirds reared a couple of broods in a nest built on the ledge of the trellis work supporting a climbing rose tree, having (I am almost sure) brought off an earlier brood a little distance away. The raspberries were

ripe when the third brood was in the nest, and the young were frequently fed with them, especially by the old cock. This year the same pair (I am assuming the hen to be the same, there is no mistaking the cock) have already reared a brood of five in a nest within a foot of last year's, and a second batch of eggs is being incubated. The raspberries were only just forming when the young were in the nest this time, but among the additional food I saw delivered either last year or this were earthworms, fallen petals from the rose, bits of bread collected elsewhere and dropped by sparrows, pieces of fat put out for the tits in winter, and the scrapings of new potatoes thrown on to the roots of the raspberries as a mulch. Upon each application of this messy material the old black-birds vigorously resorted to cleaning their bills.

YORKSHIRE NATURALISTS AT SKIPWITH

WE were still enjoying hot summer weather on June 15th when we met to revisit Skipwith and Riccall Commons; the hot dry spell had dried up the area, the vegetation had suffered seriously, and we were able to walk over many parts that are usually marshy and undesirable.

Little was added to our knowledge owing to the result of the drought. In making a search of parts covered with the moss *Aulacomnium palustre* in the hope of finding *Pahudella squarrosa*, a few stalks of which were once found here, it was very noticeable how the *Aulacomnium* was all developed by the drought into the gemmiferous form sometimes called var. *polycephalum* Huebn. or in Braithwaite's *Br. M. Flo.*, *Gymnocybe palustris* var. *ramosa* (Huds.) Lindb., which he gives as in the New Forest (Binstead, 1887) (*another hot summer*). This growth is occasionally seen, but it is evident that dry conditions have a great deal to do with the matter. The other species of the genus, *A. androgynum* is generally found in the gemmiferous state on old dry tree trunks and dry banks. Another moss noted in fair quantity on the bases of coniferous trees was *Orthodontium gracile* var. *heterocarpa* Wats.

As this meeting was the Entomological Section's Annual Field Meeting, a separate note will be found dealing with this Section's work. The dragonflies were fairly numerous and the biting flies, Clegs and Horseflies were too attentive to be interesting.

Dealing with the fungi, Mr. W. G. Bramley writes: Conditions were too dry to hope for much beyond parasitic species. One agaric was fairly common among the sphagnum swamps, but was not satisfactorily determined.

**Plasmopara pusilla* (de Bary) Schroet. on *Geranium*.

**Peronospora alsinearum* Casp. on *Spergula arvensis*.

P. effusa (Grev.) Rabenh. on *Chenopodium album*.

**P. ficariæ* Tul. on *Ranunculus repens*.

**Empusa muscæ* Cohn. on flies.

**Erysiphe graminis* D.C. *conidia* on grasses.

**Hypocrea pulvinata* Fckl.

Epichloë typhina Pers. Fr.

Chaetomium elatium Kunze.

**Diatrypella favacea* (Fr.) Ces. and de Not. on *Betula=verruciformis* (Ehr.) Mts.

Daldinea concentrica (Bolt.) Ces. and de Not. on Mountain Ash.

Ustilago violacea (Pers.) Tul. on *Lychnis alba* and *L. flos-cuculi*.

U. longissima (Sow.) Tul. on *Glyceria aquatica*.

Puccinia obtegens Tul. O. 11 on *Cirsium arvense*.

P. epilobii D.C. 111 on *Epilobium palustre*.

Polyporus betulinus (Bull.) Fr.

Polystictus versicolor (Linn.) Fr.

Stereum hirsutum (Willd.) Fr.

* Not recorded in *Catalogue of Yorkshire Fungi* for V.C. 61.

Mr. Ralph Chislett for the Ornithologists says: Skipwith Common has long been of note to Yorkshire Ornithologists largely from the observations of the York Naturalists. It is still an interesting place, but the marshes and reed beds can seldom be so dry as we found them. Some of the pools had become reduced to mere sheets of damp mud. Vociferous Redshanks still flew about them, Curlews called, and Snipe were seen but were not drumming. From one pool some 200 Black-headed Gulls arose and young birds were seen in several nests. Of ducks, only the Mallard (brood seen, and one duckling caught by Mr. Bond) and the Teal were identified. Water-hens also had partly-grown chicks. In the reed-beds several Reed Warblers were heard in song. Reed Buntings were fairly common. A pair of Yellow Wagtails and an odd cock were noted. A few Lapwings were still attached to particular places, the date was somewhat early for the flock of some 50 birds seen flying away from a marshy place.

In the wooded parts of the Common several Jays were noted. Chaffinches and Yellowhammers were somewhat scarce. A pair of Lesser Redpolls twittered above some birches. Tree-Pipits were numerous. Some half-dozen Cuckoos were seen, of both sexes by the calls. The Willow-Tit's note was heard and a typical nest found which, however, had been opened up and the eggs extracted. A family party of Long-tailed Tits was seen by the Rev. F. W. Bond. Willow-Warblers were common and several Whitethroats were noted. Blackbirds outnumbered the very few Song Thrushes and Mistle Thrushes. Two cock Redstarts were still in song. A Green Woodpecker and a Turtle Dove were noted. The Nightjar, formerly common on this very suitable ground was not noted and the Wren was scarce. While walking from Riccall in the afternoon, Mr. Malins Smith noted three Common Buntings singing from the tops of the hedgerow. Swallows were in normal numbers, but House Martins seem to be generally scarce in Yorkshire this year. Altogether 38 species were identified.

Of Mammals, several Rabbits, a Hare, and a Stoat were noted.

Flowering Plants and Ecology.—Mr. Malins Smith writes: Rarely have the plants found on a Y.N.U. excursion differed so strikingly from the list given in the Circular. It is safe to say that the majority of the plants mentioned there were not found, while the most interesting finds of the day were not mentioned in the Circular. These were *Stellaria glauca* With., Marsh Stitchwort, *Cirsium anglicum* D.C., Bog Thistle, and *Lastrea spinulosa* Presl.

The vegetation of the Common is a marked example of the Lowland Heath formation. It is determined by the very porous soil of high acidity which underlies this area. This type of soil was indicated in the arable fields bordering the Common as approached from Riccall. These grew the characteristic weeds of a light soil of high acidity, viz.: *Spergula arvensis* L. Corn Spurrey, *Chrysanthemum segetum* L. Corn Marigold, *Lycopsis arvensis* L. Small Bugloss, and *Spergularia rubra* Presl. Sandspurrey.

The soil of the Common had a characteristic profile with iron pan. At one place on the Riccall side the black layer, or 'humus pan,' was present at a depth of 14 inches. The exceptional feature here was the occurrence at a depth of 7 or 8 inches below the surface humus of a second layer of humus of a coarser character. It seemed probable that at this

point the present surface covering of ling had succeeded to a covering of bracken grown under somewhat different conditions from those now prevailing. The soil was very acid at all depths, but was somewhat less so as the parent unaltered sand was approached.

The drier parts of the heath were dominated by the common ling and the damper by blue moor-grass, *Molinia caerulea* Mœnh., while the frequent wet boggy places grew many-headed cotton-grass with sphagnum in the wettest places of all. Such a heath formation tends to progress to woodland either birch or birch-pine in the drier parts or oak-birch in the damper. Of this tendency many evidences were seen, there being numerous birch shrubs and trees in all stages of development in many parts of the area, while young oak plants were common in the wetter ground where *Molinia* was dominant. The chief cause preventing most parts of the area from developing into woodland seemed to be burning, and of this process there was abundant evidence. After burning, the ling takes some years to re-establish itself and a more open and slightly more varied association occurs which includes *Molinia*, *Juncus squarrosus* L., *Erica tetralix* L., Cross-leaved Heath and *Festuca ovina* L. The part played by *Erica tetralix* in this regeneration is rather puzzling. It was strikingly more abundant in areas recovering from burning. In such parts of more southern heaths the bell heather, *Erica cinerea* L. comes in abundantly and this is appropriate for it is a more xerophytic plant than ling and suits the drier soil, but this cannot be the case with *Erica tetralix*, which is a well-known occupant of the damper parts of the ling formation. Bracken occurred in limited areas, but did not show any signs of invading the ling. The damp heath had *Molinia* as dominant and here occurred *Lastrea spinulosa* frequently, occasional tufts of *Scirpus cæspitosus* L. and still more rarely odd bushes of *Rhamnus Frangula* L., the Alder Buckthorn.

It seemed characteristic of Skipwith Common that certain subordinate plants common in the dry-heath formation in other parts of the country were absent. The most striking example was Bilberry, which appeared to be entirely absent, and bell heather, which was almost so.

YORKSHIRE NATURALISTS AT REDMIRE

July 6th, 1940

WEEK-END meetings have always been well attended in Upper Wensleydale, but present conditions, especially petrol shortage, were all against the success of a day excursion; local members are few in number and both the Divisional Secretaries for the Northern half of the County are undertaking duties with the Army and, as a consequence, the attendance was poor.

In the wooded portion of the ghyll the drought had not had much effect and the mass of Dog's Mercury showed little sign of flagging, but in open spaces many plants were so small and dry that they were difficult to name at sight; the usually straggling *Galium sylvestre* was so small and dry that it was taken for *Hutchinsia* and small plants of Brooklime, Marsh Speedwell and *Galium palustre* on a very dry road surface were as troublesome as unexpected. Soon after entering the wood we saw Herb Paris and then some good stretches of Wood Loosestrife, Pearlwort, Rosebay Willowherb and Bugle and on one bank a very nice growth of the Beech Fern. A good deal of interest was taken in the great variation of the Spotted Orchids, one plant seen lower down the stream than the bridge was almost a yard high. Other plants seen were the Spring Sandwort, the Square and Pretty St. John's worts, Marsh Crepis, and Wood Hawkweed. Among ferns were Male, Lady, Broad Buckler, Prickly Shield, Brittle Bladder, Bracken, and further up outside the wood the Scented Mountain and Moonwort.

The stream bed did not suggest a limestone district as grit boulders were most noticeable, but the mosses gave little indication of either type. *Brachythecium rutabulum* was plentiful in a small type of growth with a lot of *Hypnum uncinatum* and some *Grimmia rivularis*, *Amblystegium filicinum*, *Mnium affine* and *Dichodontium pellucidum*. On low outcrops of limestone rocks, *Porotrichum alopecurum* and *Anomodon viticulosus* were plentiful and on the woodland surface *Mnium hornum* was abundant with *Catharinea undulata*, *Dicranella heteromalla* and *Barbula cylindrica*. Growing up tree boles with *Hypnum cupressiforme* was *Eurhynchium myosuroides* and on the branches *Ulota Bruchii*. On dry track sides we got *Rhacomitrium canescens* and in rills *Philonotis fontana* and *P. calcarea*.

Butterflies were not numerous. Those noted were the Green-veined White, Small Tortoise Shell, Common Blue, and Small Heath. One Dragon-fly, probably *Æschna juncea* was seen, but not caught, nor were interesting flies as plentiful as the very uninteresting but annoying *Hydrotæa irritans* which troubled everyone. I only got the large yellow *Tipula fulvipennis* and the wood *T. scripta*. A black and yellow *Pachyrrhina quadrifaria*, other species were *Limnobia nubeculosa*, *L. tripunctata*, *L. macrostigma*, *L. flavipes*, *Ephelia mundata*, *Molophilus appendiculatus*, *M. undulatus*, *Limnophila ochracea*, *L. nemoralis*, *Dixa maculata*, *Psilopus platypterus*, *Dolichopus picipes*, *D. plumipes*, *D. popularis*, *Ocydromia glabriculata*, *Trichopeza longicornis*, *Leptis tringaria*, *Chrysopilus cristatus*, *Platycheirus immarginatus*, *P. peltatus*, *Hæmatopota pluvialis*, *Tetanocera elata*, *T. ferruginea*, *Lunigera chærophylli*, *Neuroctena analis*, and *Dryomyza senilis*.

Fungi.—Mr. W. G. Bramley writes: In spite of recent rain Bolton Ghyll was very dry. Only one agaric was seen. Uredines were not abundant, and dead wood from last year's tree felling was singularly free from all groups of fungi.

Lycogola epidendrum Fr.
Trichia affinis de Bary.
T. varia Pers.

T. botrytis Pers.
Hemitrichia clavata Rost.
Arcyria incarnata Pers.

**Peronospora grisea* Unger on *V. beccabunga*.

**P. ficariæ* Tul. on *Ranunculus repens*.

Helotium fructigenum (Bull.) Fckl. on Beech mast.

Mollisia cinerea (Batsch.) Fr.

Nectria coccinea (Pers.) Fr.

Rosellinia aquila (Fr.) de Not.

Lasiosphæria hirsuta (Fr.) Cess de Not.

Leptosphæria acuta (M. and N.) Karst. on Nettle stems.

Ophiobolus acuminatus (Sow.) Duby. on Thistle stems.

**Diaporthe leiphæmia* (Fr.) Sacc. on Oak.

Diatrype stigma (Hoffm.) Fr.

D. disciformis (Hoffm.) de Not. on Beech.

Diatrypella favacea (Fr.) Cess de Not. on Birch (= *verruciformis* (Ehr.) Nits.).

**Hypoxylon coccineum* Bull. on Beech.

Xylaria carpophila (Pers.) Fr. on Beech mast (conidia only).

X. hypoxylon (Linn.) Fr. (ascophores).

Melanomma pulvis-pyrius (Pers.) Fckl.

Ustilago violacea (Pers.) Tul. on *Lychnis dioica*.

Triphragmium ulmariae Wint., II on *Spirea*.

Uromyces valeriana (Schum.) Fckl., II on *V. officinalis*.

U. rumicis (Schum.) Wint., II, III, on *Rumex* sp.

- Puccinia cirsii* Lasch., II on *C. palustre*.
P. lychnidearum Link., III on *L. dioica*.
 **P. holcina* Erikos, II on *H. mollis*.
P. poarum Niels., OI on *Tussilago*.

Pluteus cervinus (Schaeff.) Fr.
Trametes mollis (Somm.) Fr.
Polystictus versicolor (Linn.) Fr.
Stereum hirsutum (Willd.) Fr.
Dacryomyces deliquescent (Bull.) Duby.

Conchology.—Mr. C. F. Sweetman writes: Over terrain which should have teemed with molluscan life, specimens were found at rare intervals and in very small numbers. Perhaps the hard winter and recent drought were to blame.

These were taken:

<i>Vitrea crystallina</i> (Müller).	<i>Hygromia hispida</i> (Linné.).
<i>V. cellaria</i> (Müller).	<i>Vallonia pulchella</i> (Müller).
<i>V. alliaria</i> (Miller).	<i>Helicigona arbustorum</i> (Linné.).
<i>V. nitidula</i> (Draparnaud).	<i>Helix aspersa</i> (Müller)
<i>V. radiatula</i> (Alder).	<i>H. nemoralis</i> (Linné.).
<i>Zonitoides nitidus</i> (Müller).	<i>Cochlicopa lubrica</i> (Müller).
<i>Euconulus fulvus</i> (Müller).	<i>Azeca tridens</i> (Pulteney).
<i>Pyramidula rotundata</i> (Müller).	<i>Clausilia laminata</i> (Montagu).
<i>Helicella cantiana</i> (Montagu).	<i>Carychium minimum</i> (Müller).
<i>Hygromia granulata</i> (Alder).	

The Entomologist's Monthly Magazine for June contains 'Concerning the three species *Haliphus lineolatus* Mannerh., *H. wehncke* Gerh., and *H. heydeni* Wehncke (Col. Hydradephaga) with some remarks upon the orientation of the male sexual armature in the Hydradephaga,' by F. Balfour-Browne; 'The occurrence of both *Staphylinus cæsareus* Ced. and *S. parummentosus* Stein (Col.) in Britain,' by C. E. Tottenham; 'Some new species of Cisitæ (Col.) from Australia'; 'Notes on the Ethiopian Asilidæ (Dipt.) *Bactria* (*Promachus*) *negligens* Adams and *B. (P.) guineensis* Wied., and on a new species,' by B. M. Hobby, and several shorter notes.

The Entomologist's Monthly Magazine for July contains '*Philonthus abyssinus* Fauvel and its Allies (Col. Staphylinidæ),' by C. E. Tottenham; '*Submedetera cuneata* Becker (Dipt. Dolichopodidæ) new to Britain,' by L. Parmenter (Aviemore, Inverness); 'Notes on Syrphidæ,' by J. E. Collin (the genus *Neoscasia* Willist. (*Ascia* Mg. nec Scop.), *Chrysotoxum octomaculatum* Curt., *elegans* and allied species, *Chamaesyrphus caledonicus* sp.n. (= *C. lusitanicus* Sharp nec Mik.); 'Notes on British Collembola,' by R. S. Bagnall (*Achorutes scoticus* Carp. and Evans., Northumberland, Durham, Cheshire, and Ravenscar, Yorkshire; *A. gibbosus* Bagn., Northumberland, Durham, Lancashire, Cheshire, and Bridlington, Yorkshire; *A. bengtssoni* Agren., Northumberland, Durham, and Lancashire; *A. sahlbergi* Reut., Durham; *A. browni* Bagn., Northumberland); and several shorter notes.

The Entomologist's Record for July-August contains 'Note on Plate No. V,' by E. S. A. Baynes (aberrations of British Lepidoptera); '*Dasychira pudibunda* L. ab. *bicolor* n.ab. and ab. *concolor* Stdgr' (Plate), by E. A. Cockayne; 'Early Stages of Oriental Palaearctic Lepidoptera, IV,' by A. M. S. Talhouk; 'A Collecting Note on Diptera,' by H. W. Andrews; '*Zygaena filipendulæ* L. ab. *brunnescens* n. ab.,' by E. A. Cockayne; 'Current Notes'; and Supplement, 'The British Noctuae and their Varieties,' by H. J. Turner.

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YORKSHIRE NATURALISTS' UNION

ENTOMOLOGICAL SECTION

THE Annual Meeting of the above Section will be held at the Church Institute, Albion Place, Leeds, on Saturday, October 19th.

The Meeting will consist of one session only commencing at 2 p.m.

Will all recorders who might be unable to be present please let the Secretary have their reports prior to this meeting.

12 Dudley Road,
Marsh, Huddersfield.

M. D. BARNES,
Hon. Sec.

BIRDS AND INN SIGNS

T. HYDE-PARKER

THE subject of inn signs, fascinating as it is, might scarcely seem, at first sight, to appeal to the ornithologist, and yet birds figure to quite an appreciable extent on the signboards of our old hostelrys. Paris, indeed, according to that quaint old work, *Coryatt's Crudities*, formerly possessed a 'Bridge of Birdes,' so called 'because all the signes on one side are signes of birdes.' Let us recall a few in our own country from the memories of years of tramping, and literal as well as literary exploration.

The one that comes first to my mind—which, indeed, induced me to consider the matter—is provided by our own village, whose inn bears a sign that is, so far as I am aware, unique; at any rate, I find no reference to any other instance in the various works on this topic which I have managed to accumulate. 'The Dotterel' perpetrates the memory of days now, alas, to be spoken of in the past tense, when that interesting visitor was a common passage migrant on the eastern part of the Yorkshire Wolds. A reproduction of the actual sign, by the way, may be seen in *Letters to Young Shooters*, by the late Sir Ralph Payne-Gallwey, which noted sportsman had it repainted many years ago.

Not unnaturally, various inns have, in like manner, adopted signs of local interest. One Broadland village I know possesses both The Haruser and The Grebe. Saxilby used to boast The Pewit; Flamborough has its Seabirds; while The Grouse at Padley in Derbyshire and The Moorcock¹ near Hawes Junction (sadly associated with a terrible railway disaster) are equally appropriate. Whether the same could now be said of The Falcon at Port Erin, I am not in a position to say, though I once stayed there, but there must be parts of the Isle of Man where Peregrines are still not uncommon. The Chough at Salisbury is a bit puzzling, and The Eagle, wherever it occurs (whether Spread or otherwise!) must, I fear, be regarded merely as an adaptation from heraldry. Such, at any rate, is the case with The Eagle and Child in the Peak district, that being the crest of the Stanley family.

Possibly the bird most frequently adopted as a sign is the Swan, often further designated as White or Black—the latter presumably dating from the discovery of the Australian continent. An inn of this name at Sheffield was locally known, in the days of my youth, as T'mucky Duck! The

¹ 'The Moorcock' is a favourite sign in the North of England, and in one village at least, where the species is still plentiful, refreshment is offered by the landlord of 'The Blackcock.'—(Ed.)

Three Swans, also is not unusual—there was a good example, I remember, at Market Harborough—while The Four Swans, at Waltham Cross, used to be noted for its beautiful gallows sign. The Swan with Two Necks is reputed to be derived from the two *nicks*: the distinguishing mark of a bird which was crown property. Cygnets were represented by a house at York.

The Cock was a very common sign—the historic Cock Tavern in Fleet Street still provides a notable example—its popularity probably dating from old cock-fighting days. There is, or used to be, a Fighting Cocks at St. Albans. I seem, too, to remember a Hen and Chickens. Of other domesticated fowl, the Goose appears in that strange-sounding title The Goose and Gridiron: a combination supposed to have originated from the impression conveyed to the vulgar and illiterate mind by The Swan and Harp. This useful bird, like the duck, seldom seems to stand alone (though Yorkshire used to boast at least one Gaping Goose), but we have frequent instances of The Fox and Goose, Fox and Duck, Duck in the Pond, etc. Then there was the Three Pigeons at Brentford; while The Doves, near Hammersmith, was a resort of Thomson of 'The Seasons.'

The Peacock was ever a popular sign. Apart from lending itself to showy treatment, ancient symbolism glorified the bird owing to the supposed incorruptability of its flesh; and there was also its connection, in certain districts, with the ducal house of Rutland, as visitors to North Derbyshire will realise. The Peahen was represented by a coaching house at St. Albans.

Symbolism is also probably responsible for the sign of The Pelican: indeed The Fox and Pelican, unlike most similar compounds, had nothing to do with vulpine weaknesses, but bore reference to Bishop Fox, whose device was 'a pelican in her piety.' The many instances where the Raven was adopted were also probably heraldic in origin, for they often occur in districts where, even in olden days, that bird can scarcely have been plentiful. One house known as The Three Ravens used to make a point though of always having a live specimen or two on the premises.

The former presence of the Crane is still evidenced in several places. The Ostrich at Colnbrook (yet another bird) formerly bore this sign, and Norwich at one time had a Three Cranes, but this, I believe, has long disappeared—as has, presumably, the one mentioned by Pepys. The Stork, I have heard of, but cannot remember an instance.

The Magpie used to be fairly common: there was one at York; and this was often conjoined with something else, as in the case of the celebrated Magpie and Stump with its reputed accommodation for fabulous quantities of double

stout ! Boston once had a Bull and Magpie ; and a well-known Three Magpies (what a favourite number, by the way) bore sinister connection with a murder.

The Owl, which used, at any rate, to be found in Leeds, forms, of course, part of the coat of arms of that city, but I have also heard of a Fox and Owl, and even an Owl's Nest.

Exotic fowl, with the exception of the black swan already noted, are not largely represented. There were several George and Vultures—at one of which, it will be recalled, Mr. Pickwick was 'suspended' ! Both Green Parrot and Popinjay occur, but the only other instance I can think of is The Ostrich, which was not, at one time, uncommon.

These rambling remarks may well conclude with mention of that well-known, if non-committal, sign, The Bird in Hand.

Needless to say, the foregoing makes no pretension to completeness, and readers could probably add many further examples which I have either omitted or never even heard of.

CAREX OEDERI AT SEMMERWATER

(A Correction)

IN *The Naturalist*, August, 1939, p. 213, I recorded this species at Semmerwater. As the plant was plentiful a set of specimens was collected for distribution through the Botanical Exchange Club. This material was forwarded by the distributor to Mr. E. Nelmes of Kew, who is revising the genus for the forthcoming new *Students' Flora*. He wrote to me pointing out that the fruits were largely abortive, the utricles though swollen being mostly empty, and the beak of the utricle was reflexed. On these grounds he rejected it as *C. Oederi* and considered it a hybrid between that species and *C. lepidocarpa*, expressing the view that further search would reveal the true *Oederi* which had a hand in the formation of the hybrid plants collected. Whilst I now agree with Mr. Nelmes that this sedge cannot be named *C. Oederi* I am at the same time satisfied that no such second species was overlooked. Moreover, with the exception of $\times C. axillaris$ Good., hybrid sedges in my experience very rarely occur in any quantity in one locality, and it would be difficult thus to account for the abundance of a sterile and non-stoloniferous plant. An alternative suggestion that the plants are 'conceivably a sterile form of *C. lepidocarpa*' is, I am now convinced, the true explanation as to the identity of these sedges which contrasted so strongly with the normal *C. lepidocarpa* with which they grew. The widespread failure to set seed would presumably be due to climatic factors but I have had no opportunity of revisiting the locality to observe the behaviour of the plant this year.—W. A. SLEDGE.

MUTE SWAN CYGNETS

H. J. BURKILL, M.A., F.R.G.S.

MR. BOOTH'S interesting notes on the nesting of a pair of Mute Swans (*antea*, p. 204) has prompted me to put forward, in the hope that someone may be able to answer it, a question that has puzzled me for some years.

Just outside Leatherhead is Fetcham Pond, some 17 acres in size with a small island in the middle. The water comes up from five or six springs welling up in hollows in the pond so that there is a constant supply of fresh water, but apart from the hollows where these springs are the surface is much overgrown with various species of water weeds.

I pass along the side of this pond by an asphalte path most mornings and evenings in the year on my way to or from the station, so I can observe the behaviour of the birds pretty consistently. Our bird population comprises Swans, Coots, Moorhens, and Little Grebes, with other species as casuals from time to time. Swans number from 4 to 17 on the pond at various times, while there are generally two pairs on the River Mole which runs close to the pond and receives its overflow.

Swans nest most years on the pond and on the river and the cygnets grow faster on the river. They attain full size earlier and acquire adult plumage before the pond ones do. The pond ones are fed by a number of people who bring bread to them, while the river cygnets do not get this extra feeding.

When the river is in flood the Swans there bring their young to the pond but take them back as the waters subside. Occasionally the pond Swans migrate to the river with their brood but soon return home.

I cross the river twice a day so have a chance of seeing a little of the broods there each year, but this observation is very small compared with that provided along the river path.

There are five cygnets in a brood on the river and five in a brood on the pond this summer. I studied the river ones on August 2nd and concluded that they were some 8 or 10 in. longer in the body than the pond ones were. The only explanation I have been able to suggest during the 14 years I have lived at Leatherhead is that the water of the river gets more aeration as it is flowing downhill, and as the river bed is shallow and stony the water can be more readily warmed by the sun, so has a higher temperature than the water coming up from below the chalk. Possibly these two factors may induce some more nourishing qualities in the vegetation on which the river cygnets feed. It would be interesting to hear whether this is a likely solution of the question.

SOME BIRDS OF HOLLAND

H. FOSTER AND V. S. CRAPNELL

THE vivid descriptions of Holland and its avifauna in the books of Richard Kearton, T. A. Coward, and Canon Raven had been read and re-read. For years we wanted to visit that country and see some of its rarer birds. Our hopes that some day it would be possible to follow in the footsteps of other naturalists accompanied the mental pictures we drew. Kestrels were pictured nesting on the ground, spoonbills and Herons rearing young in low bushes, and rarities always looked for on migration but never seen. At last, in 1939, the chance came, and back in England again we know that our authors had not exaggerated the wonders on the other side of the water.

It is difficult, however, in limited space to describe all we saw, and only the fringe can be touched.

On May 31st we left Hull, bound for Rotterdam, arriving there about midday following.

First, Amsterdam was visited to call upon Dr. Van Tienhoven for permits to Naardemeer and the Hook. The offices and personnel of the Naturemonument, as the organisation for protection and administration of Dutch reserves is known, impressed with the enthusiasm and efficiency shown. We were welcomed by the doctor and his very capable lady assistant, both of whom speak excellent English. Having paid the necessary subscription to the Society, permits were issued, and instructions given as to times and meeting places. The night was spent in Amsterdam, and after a journey by tram the following morning we were met at a halt about fifteen miles from the city by Den Herr Hockman, who supervises Naardemeer.

On the way to the boat along a narrow path bounded each side by shallow dykes, a homely chaff-chaff reminded us of England; a pair of Carrion Crows, however, appearing over the trees stilled the refrain and the songster was heard no more. Bull frogs croaked and appear plentiful, often being heard at considerable distances. Soon H. F. and V.S.C., with their good ladies, were rowed along narrow waterways. The scenery resembles the Norfolk Broads, tall reeds line each side, interspersed with usual waterside vegetation, and there is just enough room for two boats to pass. Our first rarity, although common at Naardemeer, was the Great Reed Warbler, whose loud chattering is mixed with occasional notes of melody. It is larger than the ordinary Reed Warbler and certainly more vehement in song. We examined the deep, cup-shaped nest holding five eggs, fixed firmly, like the structure of its English relative, around reed stems.

Many Black Terns were on the wing and we saw a nest of three eggs. There were others, built on a swamp, more liquid than solid. The photographer would be hard put to erect a hide tent on the quaking surface of rotting vegetation and mud, surrounded by deep water. Savis Warbler 'reeled' from the top of a reed. The sound is as pronounced as the Grasshopper Warbler and just as deceptive, and the volume issuing from the tiny throat is astonishing. Purple Herons flew to and from nesting grounds. Apart from the colour, showing distinction from the commoner species by quicker wing beats. A Bearded Tit called from the 'jungle,' but refused to appear. Later, at lunch, the feathered mite—all tail it seemed—showed for a short space. Before glasses were lowered, a Bittern 'topped' the reeds, appearing from nowhere and disappearing as rapidly. Marsh Harriers—two in the air together—quartered the ground. In the strong sunlight every detail showed, particularly the creamy head—a noticeable feature. Spoonbills in flight were a dazzling white against a sky of intense blue, although the spatulate bill that gives them name was not always easy to discern. They winged purposefully to the Zuyder Zee, where shrimps are obtained.

All too soon the short but eventful voyage ended. The return walk led past a picturesque farm house and typical Dutch windmill. Here stacked reeds dried in the sun, arranged in bundles, tier upon tier. A White Wagtail distracted attention, our first in Holland, and at close quarters differences from the pied bird were noted.

Farewells had to be made, and so on the tram once more for Amsterdam station. After a too hectic rush and some delay, through a stolid official, the train was caught with seconds to spare, for the northerly point of Holland—Den Helder. The interesting but uneventful journey down the coast was soon completed. We were glad to anticipate the sea trip to Texel after the succession of fields and cultivated land. The steamer for Texel, awaiting train passengers, was boarded and we arrived on landing at the small town of Den Burgh. This is, so to speak, the capital of Texel Island, and centrally situated for reaching the reserves.

An early start was made next morning to meet Den Herr Boodt, in charge of De Waal, and awaiting his appearance we watched the antics of some Ruffs and Reeves. The exhibition was amusing and consisted of much bowing and fencing. Individuals sparred, backing away when a challenge was accepted, and one bird varied the procedure, turning completely on to its back. All appear serious and look fierce, but it is mainly bluff and no damage is done. Close by, a Blue-headed Wagtail appeared. Call and flight resemble the yellow, but the blue head, of course, settles the issue. Avocets breed at

De Waal. The long greenish-blue legs are not too lengthy to detract from gracefulness. Five pairs called anxiously and a nest with three eggs also contained a young chick. Young birds are dubbed 'babies' by the Dutch watchers and this one lay in the sun panting with intense heat. Other Avocets, a little older, ran actively at the water's edge, close by the unguarded eggs of an Oystercatcher.

To our surprise, we met here an English couple, a Mr. and Mrs. Southern, hailing from Northumberland. They had arranged to see the Oudeschild sanctuary that afternoon and invited us to accompany them. Therefore, after lunch, mounted on bicycles hired for the occasion, we rode to where our friends awaited us, with the watchers' young daughter to lead the way to the reserve. Soon hundreds of Black-headed Gulls and Sandwich Terns, with Commons and Arctics, deafened us with clamour, and eggs and young seemed everywhere. Ruffs' nests, generally with full clutches, were common, well hidden in grass tufts, giving no visible indication of their position. Black-tailed Godwits, here, as on De Waal, flew to meet us, or from some vantage point protested against the intrusion. It is considered an event to see the Black-tailed on the English coast at any time. At Texel and elsewhere in Holland, their appearance, after a time, aroused no more comment than would that of a Common Redshank in this country. We saw a number of nests of this species and thought what a notable addition it would make to our breeding list each year. Although an imposing bird, it is not so handsome as the Bar-tails seen in breeding dress on migration.

We watched a Shoveller attempting to decoy us from young in a cleverly hidden site. Our attention was divided between the anxious efforts of the old bird and keeping the youngsters in position for our friends to photograph. We found another Duck's nest, but this time a Mallard flew out. The highlight of the day however was supplied by a pool of water near by. It was small in extent, but great in possibilities. Avocets fed, with side to side sweeping of the bill, just as if wielding a scythe.

Then Kalis, the watcher, pointed out a Turnstone, and by expressive gestures indicated it to be a non-breeder in Holland, although seen often on migration. We stalked the bird, cautiously following its progress through isolated clumps of reeds. Kneeling on the moist ground, we swept the mud through our glasses and saw our bird had joined others. Appearance and carriage indicated something unusual and we crept nearer. The nearest was that long-legged wader, the Dusky Redshank, a few yards away a Wood Sandpiper sedately probed the soft mud, and in shallow water a Red-necked Phalarope swam with quick side-to-side motions of head and

bill. The Dusky was first on the wing and flew silently away, but not before the absence of white wing bars had been noted. The shank's departure startled into flight several of its commoner cousins and a number of Lapwings. After the alarm had subsided, we got even closer to the Wood Sandpiper and Phalarope, who remained feeding, undisturbed by the din.

The experience was pleasing and unexpected and enabled some of the observers to add new species to an already growing list. On return to England we reported the occurrence of these waders to the authorities in Amsterdam.

A memorable day ended with Kalis, who showed great energy and enthusiasm, taking us to the nest of a Blue-headed Wagtail, with young, built in the bank of a shallow dyke.

On the way home, more Avocets flew to meet us. In Holland this species is catholic in choice of breeding sites. At Oudeschild, among others, we were shown nests and eggs between rows of peas in fields hoed daily by farm workers.

Next day, with thoughts of the Golden Oriole, a dusty walk led to De Koog. On the way Blue-headed Wagtails flew in front, perching again and again on roadside walls. Passing a plantation of fruit trees sheltering the small farm, a bird's song charmed us with loud and unusual melody. We knocked, puzzled and uncertain, at the cottage door, asking permission to investigate. It was readily granted and the farmer came with us to listen again. Icterine warbler was a good guess, we said, as the elusive songster led us a merry dance from tree to tree. So it proved to be; at last, we spotted it and with glasses raised saw the yellow underparts up to the pulsating throat and the orange-coloured gape; another wish had been satisfied.

Those who search for the Icterine will discover it takes some finding in the thick foliage generally frequented. A good point to remember being its choice of the topmost bough of the tree from which it chooses to sing. The notes are powerful and persistent and once heard not likely to be forgotten.

Further enquiries about the Golden Oriole led to woods it is supposed to frequent, but in spite of long and determined search, the conifers remained silent and, it seemed, empty of life and we had to go disappointed away. The only consolation was the nest of a Great Tit in an empty petrol tin. The bird fed its young as we sat only a few yards away. In a field near by, Common Gulls stalked solemnly among black and white cows and we watched a Spotted Flycatcher 'hawking' insects from the enclosing fence.

We had permits for De Muy sanctuary, so we left Den Burgh by the hotel car at 9-30 the following morning and joined a part of 14. We preferred to wander around alone,

but regulations had to be respected, so more detailed observation seemed out of the question. In spite of this handicap, however, De Muy is wonderful and during a tour there is much of interest to see under the guidance of the pleasant guardians of the *Res erve*.

A Long-eared Owl, ensconced upon eggs in a low bush, submitted to the curious gaze of sightseers, watchful and alert; she budged not an inch as bushes were parted. Rather reminded of animals at Regent's Park, we felt sorry for our Owl and the ordeal of having one's domestic affairs revealed to the common gaze. Further still in the sandhills, a Kestrel flew up from the scrub, and two very juvenile hawks, looking for all the world like pieces of white blanket, lay in the nest, along with an egg. A Montagu's Harrier left three white eggs also in thick undergrowth and swept majestically around the party. For once, the elusive Grasshopper Warbler perched in full view, 'reeling' from the extremity of a low hawthorn bush and when we tired of listening two Harriers entertained with effortless flight. Slow but eventful progress led to an elevated dune, and looking over we saw a shallow lagoon of quite large extent, a beautiful oasis in the desert it seemed, after our walk through the hot sand and prickly brambles. Thus far and no further indicated our conductor, and although disappointed at not getting closer, we sat down some seventy yards away and enjoyed what the glasses revealed.

Just as the books told us, the Spoonbills and Herons were there, standing on nests in the elderberry bushes, six feet from the ground. Other nests were actually in the reeds themselves, and young Herons popped inquisitive heads above the vegetation. A pair of Wigeon, apparently uncommon there in spring, swam with Shoveller and Mallard, and Great-crested and Little Grebes were on the water, the latter diving continuously. Closer inshore, Sedge Warblers scolded and a Marsh Harrier hunted the *sueda* bushes on neighbouring dunes, a fitting contrast to a pair of stately Montagu's Harriers high overhead. We could have stayed much longer and seen more, but the claims of another party awaiting conduct compelled us regretfully to leave.

Later, lunching in the shade of low pines, a feature of these dunes, we decided to go to De Oast that afternoon. In spite of a shortened repast, however, and the aid of bicycles, lack of time and a strong head-wind prevented the attainment of our object. We had to be satisfied with investigation of the sea wall leading to the sanctuary and the interesting species that were on both sides of the great protective barrier.

Avocets and Oystercatchers with young, Godwits and noisy Redshanks, were watched as we lay well concealed in the lush grass of the banking; occasional Spoonbills flew by closer

than is their wont. The only Dunlin we saw on Texel fed in a tidal creek a few yards away. Excited Oystercatchers advertised the presence of young, and alert Godwits were even more vociferous. As we approached, frail-looking youngsters of various species swam in the shallows or stood undecided on the edge. An attempt to catch one, however, soon showed the limitations of clumsy humans. The tiny creatures ran to cover at surprising speed, on legs no thicker than darning needles, or swam nimbly across the dividing strip of deep water.

For a space we lay on the banking, enjoying the hot sun and the wonderful peace of it all. The calls of the birds, and the surge of a distant tide far out on the flats almost lulled us to sleep. This was our last day on Texel, for the following morning, bidding farewell to our host at the hotel in Den Burg, we commenced the return journey.

Having planned to visit the Hook, we travelled to Rotterdam, left all heavy baggage there to be collected next day when we joined the Hull boat, and proceeded by electric train to the Hook, where we stayed the night.

After a substantial Dutch breakfast, by 9-30 a small but powerful motor launch, carrying our party, left its moorings for the other side of the Hook and landed us at low water, to be greeted by Den Herr Yager, the watcher. He at once led the way over shifting sand, through a mixture of thickly growing *sueda* and elderberry bushes and a tangled undergrowth of thorn and bramble, by a path kept open through the wilderness. Soon our guide halted us with a gesture, and we listened enthralled to the song of a Nightingale. Yager said there were numbers at the Hook. Certainly the type of country seemed favourable to this species and to many other kinds of woodland birds. One would, in fact, never suspect from the river and its opposite bank the presence of so much cover among sandhills. It is only at close quarters that this naturalists paradise stands revealed.

The Icterine Warbler appeared again, and once more we noted the propensity to sing from the extreme top of the chosen bush. Myriads of young Starlings noisily emerged from surrounding elderberry, and a Turtle Dove, resplendent in the sunshine, displayed a white-banded tail as it flew away.

So to the sands that stretch for miles from the verge of the trees, where we saw our first Kentish Plover. Both Ringed and Kentish were breeding. On the particular stretch of shingle surveyed, contrary to expectations, the Kentish was quite common, the Ringed rare. It was often difficult to find the larger plover for purposes of comparison. Many Kentish nests were pointed out, some we found, and young, among juvenile waders surely the most dainty, were in all stages of

growth. Some ran off on twinkling black legs and vanished immediately they stopped. Meanwhile the frenzied parents tried various ruses to lead us away. Some of their efforts were startling in intensity, so lifelike they seemed. As we left the colony in peace, it was with the hope that someday acquaintance would be renewed, perhaps on migration at our own reservoirs on the Yorkshire hills.

Herr Yager was obviously proud of the great ternery of five thousand pairs of Sandwich, so closely packed that barely a foot divided the birds in places. Some sat or hovered overhead, and others flew backwards and forwards with food for the young. Most of the nests were on tops of smaller sandhills, none being in the shallow gullies between. Constant arrivals and departures, and here and there an occasional squabble added to the animated scene. We stood up and the screaming mob rose, obliterating the blue sky with a cloud of white wings and waving crests, leaving eggs and chicks open to the gaze. It was a sight that will be remembered for a lifetime.

Other maritime species were here, for as we walked along the extensive dunes we saw they were one huge ternery. At a period, five species of terns were in the air together, the Black—a wandering party of a dozen birds—and all the British breeding varieties except the Roseate, which we sought but failed to find. Avocets with families were far out on the estuary and many Shelducks, brightly coloured, were prominent objects against the mud. Herr Yager examined numbers of likely holes in the dunes for young Shelducks, shining a hand-mirror up the dark interiors. Apparently all had left, although none were seen in company with adults.

On more inland marshes, Ruffs and Reeves were abundant and nests and eggs equally so. For once, the Black-headed Gull was prominent by absence, and watching friend Yager give short shrift to more than one nest and eggs explained the reason. Here, as elsewhere, the 'Kok mew,' as the Dutch call it, is a recognised marauder and its presence not encouraged.

We walked several hours in the heat and as the loose shingle made heavy going, lunch was eaten by tacit consent and thirst quenched out of substantial bottles of lemonade. A brief rest and the return commenced by short cut over the marshes, negotiating en route numberless narrow creeks.

Nearing Herr Yager's cottage, the Nightingale was heard again and a Lesser Whitethroat sang in full view from a bramble spray. As we stopped to listen, a brood of partridge chicks scattered almost at our feet and vanished before we had time to examine.

So to Yager's little abode, perched on an eminence at the

river side, where water and tea were consumed *ad lib* before joining our little launch once more. We were sorry to part from our cheerful and energetic conductor and glad to reward him for his services. Rather sadly we stepped out of the boat, for our bird watching was virtually ended and all that remained was to catch train for Rotterdam and the boat that night.

It was all the more satisfactory, therefore, at Hook station, to see a species for which we searched unremittingly in Holland, but had failed to find—the Crested Lark. Here it was unmistakably, a dozen yards away, singing from the wires or flying down to reconnoitre the railway track. The high crest and large size, together with the call notes, easily distinguish it from the Skylark. As the train drew out and gathered speed, the wild but tuneful melody of the Crested Larks rose above the rattle of wheels. We like to think they were singing farewell to us from Holland and its birds.

Our memorable visit ended and we returned well satisfied. With no intention of record breaking, we saw ninety-five species during the week, many new to us, and the nests of thirty-seven.

In bringing this account of experiences to an end, may it be said in closing, that others who seek birds in Holland will find their path smoothed by kindness and hospitality everywhere. The Dutch are helpful and obliging in all circumstances and are true naturalists, and bird lovers in particular. In their thorough way they know how to look after the treasures that are theirs.

TEESDALE PLANTS

W. A. SLEDGE, PH.D.

DURING a visit to Upper Teesdale in mid-August I found *Malaxis paludosa* (L.) Sw. on the Yorkshire side of the river between the High Force and Cronkley. According to Baker's *North Yorkshire* it was first recorded from this district about a century ago by the Middleton lead miner John Binks; but it is listed from 'W. of Middleton' in Turner and Dillwyn's 'Botanist's Guide' (1805). It was rediscovered by W. Ingham in August, 1895 (*Naturalist*, 1895, p. 307) and ten years later was again found by W. B. Alexander (*Naturalist*, 1905, p. 355). So far as I am aware these are the only published records for this species in the Teesdale area.

Juncus nodulosus Wahl. (*J. alpinus* auct. arg.) was discovered by the late Dr. G. C. Druce on Widdy Bank in 1903 and has been gathered there and on the Durham side of the river at Winch Bridge by many botanists. Dr. F. A. Lees claimed to have found it on Great Shunnor Fell and Cronkley Fell, but I

queried these records in the *Supplement to the Yorkshire Floras* as no other botanist has verified its occurrence on the well-worked ground of Cronkley which of his two localities is the more probably correct. It is also queried for V.C. 65 in the *Comital Flora*. During my visit to Teesdale, however, I found it in seven different localities, three in V.C. 65 (but none of them on Cronkley Fell proper), three in V.C. 66, and in the Birkdale pastures near the junction of the Tees and Maize Beck in V.C. 69, to which it is certainly a new record. I have little doubt that further search would have revealed it in many more stations; indeed the plant is probably as widespread in this area as many of the better known rarities, but one requires to be on the ground later in the season than most botanists visit Teesdale to be able to discriminate it readily from the forms of *J. articulatus* L. with which it grows.

REVIEWS AND BOOK NOTICES

A Waterhen's Worlds, by H. Eliot Howard, pp. x+84, with two plates by G. E. Lodge. Cambridge University Press, 10/6. Mr. Howard's work on Bird Behaviour is well known to all ornithologists. Some of his earlier books have become classics. In this short but intensely interesting study of the behaviour of a pair of waterhens during the breeding period, the author details very closely the actions of the birds under four heads. These he calls 'Worlds,' and there are thus the 'Territory World,' 'Sexual World,' 'Platform World' and 'Family World.' Mr. Howard steers entirely clear of the temptation to interpret a bird's reactions to its environment in terms of those of a human being. His analysis of waterhen behaviour is scientific, and his reasoning is that of the philosopher and psychologist. It is possible that Mr. Howard will give many readers the impression that he regards his subjects as mere automata with no conscious personal choice of action. This is always the case when one attempts to analyse 'behaviour,' and some extremists would include even man among the creatures whose actions are prescribed by factors entirely beyond real personal control. Mr. Howard's methods are worth following up with other species and throughout the year when this is possible. This book is a notable contribution to the science of bird-watching.

The Cotswolds, with special sections on Natural History and Antiquities by H. J. Massingham, and Architecture by Clough Williams-Ellis, pp. 176, with 5 maps and plans, and 50 photographic illustrations. Ward Lock, 2/-. This is yet another addition to the publisher's deservedly famous series of guide-books. The publication of such a guide is most opportune. Thousands of people will not be able to snatch more than a few days' holiday in a year while the war continues, and instead of making for Switzerland or the Dolomites, will turn attention to the beauties of the homeland. What better choice for a holiday than a short rambling tour among Cotswold villages, fields and streams. For such lucky people Ward Lock's new guide is the ideal companion. The writing is of a high order, very well-informed, and accompanied by beautiful illustrations and three of Bartholomew's coloured contour maps. It is wonderful value for two shillings.

YORKSHIRE ENTOMOLOGISTS AT SKIPWITH

June 15th, 1940

M. D. BARNES

THE entomologists were certainly graced with excellent weather on the day of their Field Meeting at Skipwith, but owing in all probability to the long period of drought which had preceeded this meeting, many groups of insects were very poorly represented. Dragon flies were, however, a notable exception, occurring, as both Mr. C. A. Cheetham and Mr. T. Stainforth remark, in unusually large numbers.

The most outstanding captures made were the gall-making diptera on *Euribia (Urophora) stylata* (Fab.) and the moth *Nonagria dissoluta*.

COLEOPTERA

The number of coleoptera in evidence was for such a noted collecting ground disappointing in the extreme, no really outstanding captures being made.

Mr. T. Stainforth records the following species :

<i>Acupalpus dorsalis</i> (F.).	<i>Athous hæmorrhoidalis</i> (F.).
<i>Prerostichus minor</i> (Gyll.).	<i>A. hirtus</i> (Hbst.) [<i>niger</i> , Brit. Cat.].
<i>Europhilus fuliginosus</i> (Panz.).	<i>Dolopius marginatus</i> (L.).
<i>Hydroporus palustris</i> (L.).	<i>Limonium æruginosus</i> (Ol.) [<i>cylindricus</i> (Pk.)].
<i>H. obscurus</i> (Stm.).	<i>Prosternon holosericeus</i> (Ol.).
<i>H. memnonius</i> (Mic.).	<i>Rhagonycha lignosa</i> (Mull.)
<i>H. tristis</i> (Payk.).	[<i>pallida</i> (F.)].
<i>Agabus bipustulatus</i> (L.).	<i>R. testacea</i> (L.).
<i>A. sturmi</i> (Gyll.).	<i>Cantharis rufa</i> (L.).
<i>A. chalconotus</i> (Panz.).	<i>Luperus longicornis</i> (F.).
<i>Ilybius ater</i> (De G.).	<i>Crepidodera ferruginea</i> (Sp.).
<i>I. fuliginosus</i> (F.).	<i>Otiorrhynchus singulavis</i> (L.)
<i>Rhantus bistriatus</i> (Berg.).	[<i>picipes</i> (F.)].
<i>Stenus junco</i> (F.).	<i>Anoncodes (Nacerdea) melanura</i>
<i>Leptura maculata</i> (Poda.).	(L.).
[<i>Strangalia armata</i> (Brit. Cat.)].	(On pavement in Selby.)
<i>Halyzia 18-guttata</i> (L.).	

Mr. A. Smith, of York, took following species, identified by Mr. T. Stainforth :

<i>Amara familiaris</i> (Duft.).	<i>Eceoptoma (Silpha) thoracicum</i> (L.).
<i>Bembidion femoratum</i> (Sturm.).	<i>Rhynchites betulæ</i> (L.).
<i>B. flammulatum</i> (Clairv.).	<i>Malachius bipustulatus</i> .
<i>Elaphrus riparius</i> (L.).	

Additional species obtained by writer were :

<i>Carabus violaceus</i> (L.).	<i>Canthars nigricans</i> (Ml.).
<i>Notiophilus biguttatus</i> (F.).	<i>Sphæroderma rubidum</i> (Gyll.).
<i>Leistus ferrugineus</i> (L.).	<i>Rhynchites mannerheimi</i> (Hy.).
<i>Loricera pilicornis</i> (Hbst.).	<i>Strophosomus melanogrammus</i> (Fo.).
<i>Bembidion lampros</i> (F.).	<i>Apion curtirostre</i> (G.).
<i>Coccinella 10-punctata</i> (L.).	<i>A. violaceum</i> (K.).
<i>Thea 22-punctata</i> .	<i>Cyphon variabilis</i> (Tb.).
<i>Aphodius fossor</i> (L.).	<i>Phyllobius pyri</i> (L.).
<i>A. merdarius</i> (F.).	<i>Orchestes rusci</i> (Hb.).
<i>Geotrupes stercorarius</i> (L.).	<i>Cæliodes rubicundus</i> (Hb.).
<i>Elaeter balteatus</i> (L.).	

DIPTERA

Mr. C. A. Cheetham writes :

Species of *Tipula* were few, those taken being :

Tipula maxima (Poda.). *T. luna* (Westh.).
T. fulvipennis (Deg.). *T. oleracea* (L.).

Other closely related species caught were *Prionocera turcica* (F.) and *Pachyrrhina crocata* (L.).

The clegs were fairly plentiful, *Hæmatopota pluvialis* (L.) being troublesome and the large *Theriopectus bisignatus* (Jaen.) in fair number but not so vicious.

Mr. Smith, of York, took the gall maker *Euribia* (*Urophora*) *stylata* (Fab.) on thistles, and this, I think, has not been recorded previously for Yorkshire.

ODONATA

Mr. T. Stainforth writes : ' I do not remember ever to have seen dragon flies in greater abundance than around the gull ponds. An *Aeschna* looking like *cyanea* was common, but I was unable to capture for certain identification. *Libellula depressa* and *L. quadrimaculata* occurred in hundreds. Of the smaller dragon flies captured and identified were *Agrion puella* and *Pyrrhosoma nymphula*.'

In addition to the species mentioned by Mr. Stainforth, Mr. Cheetham captured *Lesles sponsa* (Hans.) and *Enallagma cyathigerum* (Charp.).

LEPIDOPTERA

Of this group Mr. A. Smith writes as follows :

BUTTERFLIES : *Pieris napi*, *Pararge megæra*, one male flying by road side on the railway bridge near Riccall. Also specimens of *Lycæna icarus* and *Hesperis thaumas*.

MOTHS : Mr. Cheetham took two male *Nemeophila russula* on the common, while on willow at Riccall larvæ of *Tethea retusa* were also found. Among Phragmites growing in the pond near Riccall Church larvæ of *Nonagria dissoluta* were common ; this is a most interesting record. The species has been very little studied in Yorkshire and may occur almost anywhere that reeds grow. Many localities are known in the south, but our Yorkshire specimens have up to the present all been obtained from two localities, Scathingswell and Everingham. *Timandra amatarca* occurred near Skipwith village together with large numbers of common 'micros.' *Byotropha terella*, *Nemaphora swammerdammella*, *Glyphopteryx fuscoviridella*, *G. thrasorella*, this latter was found in great profusion flying in company with the common *Bactra lanceolana*.

Penthma pruniana taken at Riccall.

Geology by the Wayside, by I. O. Evans, pp. vii+120, with 52 figures and 24 photographs. Murby, 3/6. This is an excellent introduction to elementary field geology, and it is just the book for the rambler with no previous teaching in the subject. It is well written and profusely illustrated with entirely suitable diagrams and photographic plates. There is a chapter on 'The Soil—By which we live,' by Professor G. W. Robinson, and there are appendices dealing with the recognition of rocks and minerals, books for further reading, and an outline of historical geology.

Part VI of W. J. Arkell's 'Monograph on the Ammonites of the English Corallian Beds' has just been issued by the Palæontographical Society, Vol. XCIV. In this, two specimens in the Hull Museum are referred to, namely (1) *Aspidoceras* (*Euaspidoceras*) *perarmatum* (J. Sowerby), as from Appleton, matrix of Osmington Oolite Series ; and (2) *Aspidoceras* (*Euaspidoceras*) *paucituberculatum* Arkell, Yorkshire : Silpho, probably Middle Calcareous Grit, oolitic gritty limestone matrix. This latter is also figured on Plate XLI of the monograph.

YORKSHIRE NATURALISTS AT WOMBLETON

August 5th, 1940

MANY difficulties had to be overcome in connection with the August Meeting. Thirsk proved impossible, the hotels were full and as Miss Rob was undertaking military duties she could not help; fortunately Mr. Highfield undertook the task but he found that Helmsley and Coxwold could not take us, and finally Mrs. Golding suggested Wombledon, which proved an excellent centre and provided interesting and unexplored country which will repay other visits at different dates in the future. The keld or spring heads provide a distinct type of situation of an interesting description and the winding courses of the Rye and Riccal are at hand. We started by working the banks of the Rye at Nunnington, where we saw the Horned Pondweed, *Zannichellia*, a plant very seldom seen on our excursions. Unfortunately we had no ornithologists in the party, but Mr. Golding said that three Corncrakes had been heard calling at the same time this year and apparently Wombledon is one of the places this bird has not deserted as he stated that it is usually heard there yet; he thought that many of the small birds were in reduced numbers this season judging by the far fewer bird nests found by the children, and he thought that Swallows were in less numbers than usual. Insects were not numerous, a fair number of White Butterflies were present and also Small Coppers, but only odd Small Tortoiseshells and Meadow Browns and a single Painted Lady and Small Skipper. Among the diptera many interesting species were caught, one of the best being a black limnobiid *Hexatoma* (*Peronocera*) *fuscipennis* Curt. This was in fair numbers on umbellifers by the river at Nunnington. We have two species of this curious genus in Britain, they occur on shingle banks in streams, and both have been caught in Yorkshire, but only in a single station in each case. The best addition to the Yorkshire list is a large tachinid, *Echinomyia fera* L., which was caught at Cauklass Bank where the robber fly *Machimus atricapillus* Fln. was taken; another tachinid, *Ernestia radicum* L. was fairly common. By the river sides and spring heads a fair number of reed borers were present and the following were caught: *Limnia rufifrons* F., *Tetanocra laevifrons* Lw., *T. elata* F., *T. (Pherbina) coryleta* Scop., *T. punctata* F., *Elgiva albiseta* Scop. Among the gall makers were *Trypetoptera* (*Tetanocera*) *punctulata* Scop., *Sphenella marginata* Fln., *Trypeta florescentiae* L., and *T. (Onotrophes) cylindrica* Dsr. Dolichopods and empids included *Empis tessellata* F., *Dolichopus plumipes* Scop. and on a pond in disused brickworks the beautiful *Pacilobothrus nobilitatus* L. The Hoverflies taken were *Syrphus ribesii* L., *S. corollae* F., *Syrirta pipiens* L., *Eristalis arbustorum* L., *Platychirus clypeatus* Mg., *Sphaerophoria menthastri* L., *Melanostoma mellinum* L., *Chilosia Bergenstammi* Bkr., *C. proxima* Zett. Tipulids were few and included *Tipula paludosa* Mg., *T. lateralis* Mg., *T. montium* Egg., *Pachyrrhina lineata* Scop. (*histrio* F.), *Ptychoptera paludosa* Mg., *Limnophila discicollis* Mg., *Dicranota bimaculata* Schm., *Erioptera squalida* Lw., *E. fuscipennis* Mg., *Cheilotrichia imbuta* Mg. Other interesting species are: *Opomyza florum* F., *Loxocera aristata* Pz., *Graphomyia maculata* Scop., *Chalarus spurius* Fln., *Pipunculus littoralis* Bkr., *P. campestris* Ltr., *Leptis tringaria* L., and *Symphoromyia crassicornis* Pnz.

Flowering Plants.—Mr. A. Malins Smith writes: Outstanding plants from this varied district were *Zannichellia palustris* L. and *Potamogeton densus* L. from the River Rye at Nunnington. *Scirpus sylvaticus* L. by a tributary of the River Rye, and *Tanacetum vulgare* L. on the artificial dike by the same river. *Actaea spicata* L. and *Verbascum Thapsus* L. in the wood on Cauklass Bank, *Inula Conyza* D.C., *Lithospermum officinale* L. and *Brachypodium pinnatum* Beauv. on a grassy slope on Cauklass Bank, *Calamintha officinalis* Moemh. and *Helianthemum chamaecistus* Mill. on the open slope below the wood on Cauklass,

Specularia hybrida D.C., *Stachys arvensis* L. and *Linaria minor* Desf. in the cornfields on Cauklass, *Menyanthes trifoliata* L., *Carex hirta* L., and *Hypericum tetrapterum* Fr. in a boggy place near Wombledon, and *Astragalus glycyphyllos* L. on the roadside on Cauklass Bank. Other plants found were *Plantago media* L., *Centaurea Scabiosa* L., and *Carduus nutans* L. *Agrimonia eupatoria* and *Scabiosa arvensis* L. were common, but though search was made for *Agrimonia odorata* Mill. and *Scabiosa Columbaria* L. they were not found. *Tamus communis* L. was a common plant in the hedgerows. *Bartsia Odontites* Huds. was found in the form *vulgaris* Mœnch., not the more usual *serotina* (Rchb.).

Ecology.—The River Rye in the Nunnington area has a swift current and is liable to sudden floods. The vegetation has to suit these conditions and many plants are excluded which find foothold in slower streams. *Elodea canadensis*, *Potamogeton densus*, and occasionally *Zannichellia palustris* formed the submerged vegetation while occasionally a narrow zone at the sides where the current was slower showed *Potamogeton natans*, the only representative of the floating-leaved type. *Elodea canadensis* was particularly abundant on the submerged banks of alluvium brought down by the side streams and seemed here to be the pioneer vegetation. It was probably the great force of the current which had produced a peculiar growth form in *Elodea* and *P. densus* in which tufts of leaves were seen at the tip of long bare stems up to 3 ft. long. On the steep banks of the stream *Scrophularia Balbisii* and *Barbarea vulgaris* were frequent and in the quieter bays water plantain and water mint were the chief plants.

A small shallow pond just off a tributary showed clear zonation. In the water was water plantain. On the edge Yellow Flag, heavily fruited nearest to the water. Then came a zone of *Scirpus sylvaticus*, intermixed in one part with *Phalaris arundinacea*. Outside this was a zone whose main constituent was Meadowsweet, but Common Nettle, *Epilobum hirsutum* and Meadow Cranesbill were also present. The pond tailed off to a damp hollow in the grass field where the Meadowsweet was mixed with much Creeping Buttercup and Water Mint. The alluvium of the river banks was neutral in reaction and the whole region gave evidence of absence of soil acidity. The edges showed Dogwood, Maple, Sloe, Guelder Rose, and Hawthorn, all this year bearing good crops of fruit. The presence of Bogbean, *Menyanthes trifoliata* L. in a marshy place near Wombledon fitted in with this general picture of waters from the limestone uplands, carrying alkaline solutes and so preventing soil acidity. The river banks were protected by an artificial raised dike and the side of this toward the river was, in the vicinity of Ness, occupied by a thick scrub of Hawthorn, which was undoubtedly progressive toward woodland. The side next to the cornfields had no Hawthorn. Here it was cut down by the farmers and this, it appears, is done regularly in this area lest Hawthorn scrub should take possession of the grass fields. Other common plants of the riverside were the Welled Thistle, *Carduus crispus* L., and in damper parts Butterbur.

The return walk from Ness to Nunnington was notable for some very fine trees of Ash, Oak, Beech, and Crab Apple. The Crab Apple trees were the largest I have met with, and as every branch was heavy with fruit, the total crop was enormous. Beech, too, was full of mast, though at this stage our examination could not determine whether it would form sound seed.

Cauklass Bank showed a remarkably varied vegetation. The wood west of the road was an ash wood on limestone with a few Oaks in the deeper soil near the bottom of the slope. The shrub-layer included Hazel, Maple, Buckthorn, and Spindle-tree, the latter very badly attacked by Aphis. The ground vegetation was remarkable for the profusion of Dog's Mercury which occupied the whole slope. Next, but

a long way behind, in abundance, was Ground Ivy with Primrose and Hairy Violet. Still more thinly scattered were Hairy St. John's wort, Wild Basil, Herb Bennet, Figwort, and Burdock. Herb Robert, Crosswort, and Bluebell were occasional, Baneberry rare. In the deeper soil toward the base of the slope, the Broad-leaved Bellflower, *Campanula latifolia* L. and Red Campion were found. The soil of the slope was a thin, dry soil over limestone, with a crumbly texture and basic in reaction pH 7.5 (approx.). On the eastern side of the road very much the same species occurred in the undergrowth, but there was a remarkable change in the status of Dog's Mercury, which was only thinly scattered, the other plants being correspondingly more abundant. This vegetation was on a damper soil of somewhat more sticky texture, though still basic in reaction. The difference in the moisture content of the soil on the two sides of the road was also indicated by the vegetation just below the wood, the drier side showing Rockrose and Salad Burnet, which were absent on the wetter, where occurred Calamint, Marjoram, and occasional Bartsia.

A small grass heath by the roadside was dominated by *Brachypodium sylvaticum* R. and S. and *B. pinnatum* Beauv., with Marjoram and Ploughman's Spikenard abundant, and *Lithospermum officinale* L. occasional. In the cornfields above and below the wood the weeds were very varied and abundant and included Field Madder, Scarlet Pimpernel, Field Speedwell, Field Woundwort, Knotgrass, Black Bindweed, Dove's Foot, Cranesbill, Fumitory, Shepherd's Purse, Goosefoot, and Orach, with Lesser Toadflax, and *Specularia hybrida* D.C. occasional.

Algae.—A few interesting algæ were found, including *Draparnaldia glomerata* (Vauch.) Agardh. from a small stream near Nunnington, and *Draparnaldia plumosa* (Vauch.) Agardh., *Chaetophora tuberculosa* (Roth.) Agardh. and *Phormidium autumnale* (Ag.) Gom., gathered by Mr. Pickles from the spring heads at Welburn.

Fungi.—Not much was seen in this group, but the telentospore stage of *Puccinea violæ* was found on *Viola hirta* and all the plants of *Verbascum Thapsus* seen were badly mildewed by one of the Peronosporales.

To this may be added that Wombleton is not a mossy area and walls are few where *Tortula muralis*, *Ceratodon purpurens*, and *Bryum* sps. may be seen whilst *B. argenteum* and occasional tufts of *Funaria hygrometrica* were at the foot of walls and crevices in pavements, possibly the most interesting feature was at the Keld Heads where *Amblystegium filicinum* was the one moss occurring in plenty; a little further from the spring head in soft marshy ground *Hypnum cuspidatum* joined it and in ponds *Hypnum riparium* took the place of both these. At the sides of the rivers were *Fontinalis antipyretica* and *Eurhynchium rusciforme*, and on stones here we found *Fissidens crassipes*, and on the soil *F. taxifolius* and *Dicranella varia*. At Caulkess Bank *Eurhynchium murale* made the best show, helped with *E. praelongum*, *Amblystegium serpens*, *Brachythecium rutabulum*, *Mnium hornum* and *Weisia viridula*. Other very common mosses were only found in very small patches and included *Hylocomium triquetrum*, *H. squarrosum*, *Brachythecium purum*, *Thuidium tamariscinum*, *Mnium undulatum*, *M. rostratum*, *Hypnum palustre*, *Dicranum scoparium*, and *Polytrichum commune*.

The Entomologist's Record for September contains 'The buff form of *Biston betularia* L. ab. *lomasaria* Cottam, and ab. *decolorata* n. ab. their history and genetics,' by E. A. Cockayne; '*Oxya* (*Tephritis*) *parietina* L. in N. Kent,' by H. W. Andrews; 'On travelling larvae,' by an old moth hunter; '*Philophylla heraclei* L. (Diptera, Trypetidae) bred from *Smyrnum olusatrum* L. (Alexanders)' '*Iodis lactearia* L.' by C. R. N. Burrows; Collecting Notes, Current Notes, and Supplement, 'The British Noctuae and their Varieties,' by H. J. Turner.

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NEWS FROM THE MAGAZINES

The Entomologist for August contains 'A new British Coleophorid : *Coleophora otitæ* Zeller,' by H. M. Edelston ; ' *Eupista flavipennella* Dup. (Lep. Coleophoridae), an addition to the British fauna,' by F. N. Pierce ; 'Notes on the life history of *Perizoma læniata* Steph., with breeding hints, etc.,' by P. J. Burton ; 'Dragonflies in 1939,' by H. G. Attlee ; 'Odonata from France and Italy, 1937-1938,' by J. Cowley ; 'A synopsis of the genus *Elmoparnus* Sharp (Coleoptera Dryopidae),' by H. E. Hinton, and numerous notes and observations.

The Entomologist's Monthly Magazine for August contains 'Notes on British Collembola (with figs.),' by R. S. Bagnall (*Anurida denisi* Bagn., Thornwick Bay, Yorks., *Proisotoma sphagneticola* Bagn., Lindow Common, Cheshire) ; ' *Neurigona abdominalis* Flin. taken in Herts., and a key to the British species of *Neurigona* (Dipt. Dolichopodidae),' by L. Parmenter ; 'Two new West Indian Curculionidae (Col.),' by G. A. K. Marshall ; 'A note on certain structural distinctions between the females of *Therioplectes tropicus* L., *solstitialis* Mg. and *distinguendus* Verr. (Dipt. Tabanidae),' by J. E. Collin ; 'New species of Oriental Staphylinidae Col.,' by M. Cameron ; 'Results of the Oxford University expedition to Sarawak (Borneo), 1932,' ; 'Gryllacridae and Gryllidae (Orthoptera),' by L. Chopard ; and several shorter notes.

Referring to the note recording Eskimo spears being embedded in whales, in *The Naturalist* for August, Mr. T. Hyde-Parker of Reighton has sent to us the iron head, obviously of native work, which bears the following label 'This assegai point was taken from the centre of an elephant's tusk. H. B. & H. Sept. 15/97. No trace on the outside.' Mr. Hyde-Parker states this was found while sawing the elephant tusk at Sheffield for the purpose of making knife handles, and was entirely covered up by the ivory and showed no trace of its appearance until cut into. This reminds us that we have here a square spring-gun, which was found in the centre of a large tree trunk at a Hull saw-mill, and severely damaged the saw teeth. Apparently it had been attached to a young tree, and in time, the wood had grown all round it.—T. Sheppard, Museum, Hull.

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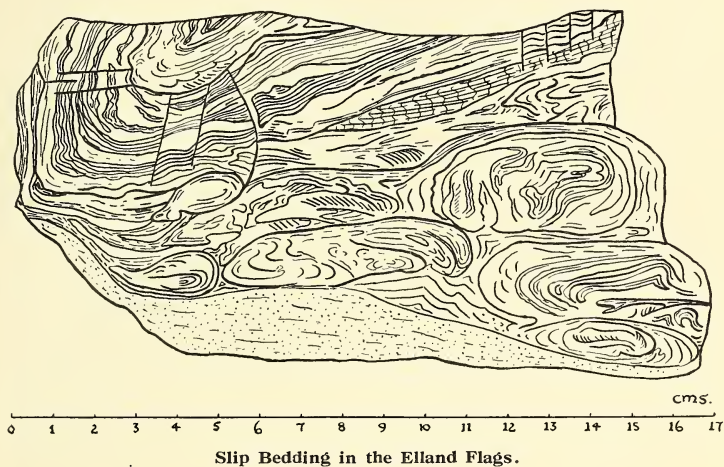
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SLIP BEDDING IN THE ELLAND FLAGS

R. G. S. HUDSON AND H. V. DUNNINGTON

DURING 1940 a boring for water was put down in the Lower Coal Measures at Meadow Lane Gas Works, Leeds. Percussion drilling was employed to a depth of 51 ft. 6 in., the total depth being 484 ft. The boring commenced in the measures above the Thick Stone and ended near the base of the Elland Flags. The interest of the strata passed through is in the occurrence of three freshwater lamellibranch



bands and in the slip bedding which occurs in the Elland Flags.

The authors record their thanks to Professor A. E. Trueman who named the freshwater lamellibranchs and to Mr. J. E. Hills, of Messrs. C. Isler & Co., Ltd., and Mr. C. S. Shapley, M.I.Mech.E., City of Leeds Gas Department, who granted permission for the examination of the cores. The cores of other borings in the Elland Flags in the neighbourhood of Leeds and Bradford were also examined and slip bedding was of common occurrence.

BOREHOLE SECTION AT MEADOW LANE GAS WORKS, LEEDS

		Thickness		Depth	
		ft.	in.	ft.	in.
<i>Carbonicola</i> fauna at 42 ft.	Superficial	27	0	27	0
	Grey shale	21	0	48	0
THICK STONE.	Fine-grained compact grey sandstone with micace- ous flags towards base	24	0	72	0

1 Nov. 1940

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0

		Thickness		Depth	
		ft.	in.	ft.	in.
Carbonicola fauna at 78-84 ft.	Grey shale with large clay-ironstone concretions throughout ...	46	0	118	0
BETTER BED IRON-STONES.	Mudstone and siltstone tilestones in thin alternation; slip bedding, 120-123 ft. ...	5	0	123	0
	Shale with small ironstones	23	0	146	0
BETTER BED COAL.	Coal ...	1	0	147	0
	Ganisteroid grey sandstone with ironstone-filled rootlets ...	2	0	149	0
	Grey siltstone, much disturbed by worm burrows and flaggy at base ...	3	0	154	0
	Shales with clay-ironstone concretions ...	5	0	159	0
	Micaceous flagstones ...	3	0	162	0
	Thin alternating carbonaceous and non-carbonaceous mudstones ...	15	0	177	0
	Grey micaceous shale with plant debris ...	16	0	193	0
Carbonicola fauna at 192 ft.	Shale with thin flagstones and plant debris near top	5	0	198	0
	Micaceous flagstones ...	4	0	202	0
	Grey shale with plant debris	31	0	233	0
	Black siltstone, worm riddled ...	4	0	237	0
	Mudstone and siltstone tilestones ...	23	0	260	0
	Laminated mudstones with slip-bedding at 260-264 ft.	16	0	276	0
	Grey shale with sandy partings ...	10	0	286	0
	Carbonaceous shale ...	19	0	305	0
	Grey shale with ironstones	8	0	313	0
	Carbonaceous shale and siltstone with worm burrows ...	2	3	315	3
	Black shale with plant debris ...	1	9	317	0
ELLAND FLAGSTONES.	Fine-grained compact sandstone with shale partings at base ...	6	6	323	6
	Coal with dark-grey silty seat-earth with worm burrows ...	3	0	326	6
	Mudstone and siltstone tilestones with slip-bedding	3	0	329	6
	Shale with plant debris ...	2	6	332	0
	Thin coal on worm-riddled siltstone ...	4	0	336	0
	Black shale ...	6	0	342	0
	Siltstone with abundant pebbles ...	1	6	343	6
	Fine-grained micaceous sandstone ...	23	6	367	0

ELLAND FLAGSTONES (continued)		Thickness		Depth	
		ft.	in.	ft.	in.
{	Micaceous tilestone with thin carbonaceous laminae (10 to 1 in.) ...	3	0	370	0
	Level-bedded micaceous sandstone with carbonaceous partings; some ripple marking; flaggy near base ...	34	0	404	0
	Shale with occasional sandstone partings and much plant debris ...	44	0	448	0

Carbonicola faunas occur at three horizons. *Carbonicola* sp. probably of *C. communis* D. and Tr. group was found at 42 ft. depth, 105 ft. above the Better Bed Coal. *Carbonicola* sp. nov. cf. *C. acutella* Wright, *Carbonicola* sp. and ? *Carbonicola* sp. (possibly *Anthracomya* sp.) occurred in the shale between 78 to 84 ft. depth, 67 ft. above the Better Bed Coal. The other *Carbonicola* fauna was found 45 ft. below the Better Bed Coal.¹ It includes *Carbonicola* aff. *communis* D. and Tr. (4),² *Carbonicola* aff. *communis* D. and Tr. s. lat. (3), *Carbonicola* sp. nov. cf. *C. acutella* Wright (7), *Carbonicola* sp. nov. cf. *C. concinna* Wright or *C. affinis* D. and Tr. (2), and *Carbonicola* spp. (4). The forms referred to *Carbonicola* sp. nov. cf. *C. acutella* are not likely to be related to that species: the resemblance is only in the shape of the posterior end.

From the plant debris which occurs at the top of the Elland Flags at 193 to 195 ft. depth the following were collected: *Lepidophloios acerosus* (L. and H.), *Lepidophyllum lanceolatum* (L. and H.), *Mariopteris muricata* Kidston, and *M. nervosa* (Brongt.).

The top of the Elland Flags is taken at 193 ft. at the base of the shale containing the *Carbonicola* fauna. It is separated from the Better Bed Coal and Ganister by 44 ft. of beds, mostly mudstone.

SLIP BEDDING

The occurrence of slip bedding in Coal Measure strata has long been known but can rarely be demonstrated in the field since in natural and quarry sections the strata rapidly weathers and the slip bedding loses its clear-cut character. In the present boring slip bedding occurs at 120-123 ft., 260-264 ft., and 326-329 ft. in laminated mudstones and siltstones. The slip bedding is most marked in the finely-laminated mudstones of alternate light and dark-coloured sediment, a difference in

¹ This is probably the freshwater lamellibranch band exposed in the floor of the old brick-pit at Roseville Road, Leeds, and recorded by Edwards, *Trans. Leeds Geol. Assoc.*, V, p. 6.

² The number in brackets after the fossil names refer to the number of specimens collected.

colour which is in the main due to the absence of carbonaceous material in the light-coloured laminæ though these are often of slightly coarser sediment than the darker layers. The slip beds are contorted into numerous and varied folds, mostly irregular recumbent folds with their axial plane parallel to or at a slight angle to the main bedding. The laminæ are variously thinned and thickened and are often completely thinned out but rarely sharply broken. The upper limbs of the folds often override the lower limb and are ruckled into numerous small folds. The front of the fold is often sharply defined and forms a roll along the surface of which the rock often breaks. These rolls are often complete and are formed by a compacted and slightly flattened core of the lighter-coloured coarser sediment an inch or so in diameter wrapped round with the darker laminæ. These rolls when broken out are often seen to be twisted.

Small scale slip faulting with throws of one or two millimetres occasionally occurs and occasionally the folds are broken in which case the lighter and apparently more rigid material is thrust into a mush of the more carbonaceous material.

A series of approximately parallel slip planes occur throughout the slip beds. They are at a small angle to the true bedding and separate one set of folds from another. In this boring each thickness of slip bedding includes less contorted layers as well as the more complex, the total thickness in each case being about three to four feet. Both the upper and lower limit of these thicknesses of slip bedding are similar and are formed by an irregular surface along which contorted and normal laminæ occasionally intermix. Often at the base the fronts of successive 'rolls' impinge on the more or less undisturbed strata below. There is no evidence that the upper surface of the contorted bed was one on which deposition subsequently took place. Where the junction between the contorted beds and the undisturbed beds above is a clear-cut one, it is because the surface is a slip-plane. Where the beds above are coarser material they have sometimes been forced into the contorted beds in a series of bulges.

The Elland Flags are from 200 to 250 ft. thick in the Leeds-Bradford area. They are mainly fine-grained sandstones, siltstones, and bedded mudstones, all characterised by an evenness of bedding. The mudstones are usually pale grey: the darker carbonaceous mudstones are rare and the soft soapy mudstone absent. Striped beds are common and vary in coarseness. The alternation may be due to difference in grade as from mudstone to siltstone, but often in a mudstone is due to difference in the amount of carbonaceous material. In this case the light-coloured sediment changes

gradually into the darker layer the top of which is often clearly defined.

The fine-grained sandstones and the siltstones are mostly pale grey uniform in colour with the greater part of the mudstones. They are evenly bedded and are usually flagstones or tilestones. Current bedding except where thicker bedded sandstones are developed is rare and the usual Coal Measure phenomena of wash-outs, slumping and lurching is absent. Coals are rare; fireclays are fairly common. Marine bands and freshwater lamellibranch bands are absent, but strata riddled with worm burrows are common.

It thus seems likely that the Elland Flags were in the main the subaqueous topset beds of deltaic origin widespread over an area of intermittent subsidence.

Most of the larger deformations of Coal Measure strata have been attributed by Kendall¹ to the lurching of soft alluvial materials by earthquake agency, phenomena which took place in the sub-aerial part of the delta in the peat swamps and associated beds. It is suggested that the slip bedding in the Elland Flags is the comparable phenomena in the subaqueous topset beds and that extensive areas and thicknesses of sediment slipped seawards on a small thickness of beds which acted as a lubricated surface and which were contorted and rolled up into slip beds in which there were numerous slip planes along which there was considerable horizontal movement. The complex deformation of often unbroken lamellæ suggests that the sediment was to a large extent water saturated and that the thin alternate layers of carbonaceous and non-carbonaceous mud were extremely plastic and had little rigidity. The view that the contortion of the slip beds took place under a considerable load of sediment is supported by their relation to the undisturbed beds above and below: it may be that the thickness of any one set of slip beds, in this case two to three feet, may have had a relation to the amount of load. It is suggested that the minute faulting seen in the slip beds was a subsequent adjustment.

It is unlikely that the instability of the slipped mass was due to an original slope of deposition. It was more probably due to unequal subsidence, to unequal compacting of the sediment, or to differential loading: explanations which can only be verified by examination of the associated strata over a wide area. If on a small scale the slipping might be due to the withdrawal of support due to channelling. In any case it might well be that the slipping was initiated by earthquake tremor.

¹ P. F. Kendall, 1923. *The Physiography of the Coal Swamp. Rept. Brit. Assoc. Adv. Sci. Hull, 1922, p. 49.*

COMMA BUTTERFLY

ON October 19th a boy brought to the Cartwright Memorial Hall Museum a live Comma Butterfly which he had captured near Lister Park, Bradford.—SIDNEY JACKSON, Cartwright Memorial Hall Museum.

DEATH'S HEAD HAWK IN BEEHIVE

A DENT beekeeper sent to the Cartwright Memorial Hall Museum in October a Death's Head Hawk Moth which he had removed from the brood box of one of his hives. The scales and fur had all disappeared, and the body had been partly dismembered by the bees.—SIDNEY JACKSON, Cartwright Memorial Hall Museum.

THE REDWING

DURING the week-end October 19th-21st, there would seem to have been a considerable immigration of Redwings. On the morning of the 20th I disturbed several from the bracken of a high moor on the Derbyshire side of the South Yorkshire boundary. Near by, in the afternoon, a flock of 20 flew southward, 'seeping' over the tops of some trees in a wood through which I was passing. After dusk, between 7-15 and 7-30, the 'seep' of Redwings sounded many times from the darkness overhead. It would be interesting to build up a chain of evidence whereby the movement could be traced to the coast, and I should be glad of any similar notes. In the Peak District end of the Pennine Chain the species usually travels down the eastern side. The point at which they crossed the coast may, of course, be north of Yorkshire.—RALPH CHISLETT.

LIMESTONE POLYPODY IN THE PICKERING DISTRICT

A SPECIMEN of the limestone polypody was found near the end of August in Newton Dale, near Pickering. The situation is unusual for this fern; the subsoil where it is growing is Oxford Clay which underlies the oolitic limestone. It is growing in a deep culvert which has the sides built in with heavy blocks of dressed stone (calc. grit), and the fern is deeply rooted between the blocks. The leaves are very large and luxuriant and quite different in character from the oak fern (*P. dryopteris*). Some of the fern has grown out from the culvert and established itself on the grassy bank above, but here it is much more dwarfed in character. The culvert is a rich fern habitat and contains abundant growths of bladder fern, lady fern and hard prickly shield fern, but there is only the one patch of the limestone polypody, and the fern is not known anywhere else in the district, although there are many situations on the oolitic limestone which would be much more normal for it. When found this year specimens were sent for identification to Mr. E. R. Cross of Scarborough and Mr. C. A. Cheetham.—E. G. HIGHFIELD, Pickering.

THE ROOK IN THE ISLE OF MAN

KENNETH WILLIAMSON AND W. S. COWIN

THE Rook (*Corvus f. frugilegus* L.) is a bird well worthy of study for several reasons. It is an abundant species nesting in colonies, and building in the bare trees quite early in the spring. By these virtues it is a familiarly known species, always an advantage in making a regional study of a widely-distributed bird. Its merits and demerits in relation to agriculture have been widely discussed, but we do not wish, at this stage of our survey of the status of the Rook in Man, to enter into economic considerations. These, together with the data appertaining to the individual rookeries, will have to be postponed until after the war, when opportunities for increased field-work and greater space for publication may reasonably be expected.

During the last war a serious attempt was made by the Board of Agriculture to reduce the number of rooks in the Island, and we understand that another such attempt is to be made. There can be no doubt but that the Rook has increased since the last war, despite the fact that most of the large rookeries are shot over every May.

We are placing on record the present status of the Rook in Man so that a comparison of its numbers now and after the present war may be made and followed up in future years, and also to discount any extravagant claims which may be brought against the bird in respect of its present-day numbers in the Island.

Lists of Manx rookeries were compiled by P. G. Ralfe in 1903¹ and 1923,² but no census of birds seems to have been attempted until 1938, when a survey which resulted in 93 per cent. of the rookeries being counted was made by members of the Manx Field Club. The scheme was sponsored by the Manx Museum, and prominent among the helpers were teachers and pupils of the Boys' and Girls' High Schools in Douglas and other schools in the Island, to whom the writers tender their thanks.

This year, 1940, when discussing the effects of the severe winter, Mr. A. H. Karran suggested that another count should be made to further the survey and to find out whether the cold had had any effect on the numbers of nesting rooks. Although few helpers could be obtained owing to the war, these made up for lack of numbers by their keen enthusiasm, and they again succeeded in visiting over 90 per cent. of the rookeries. Special mention must be made of Mr. A. H. Karran, who went to much time and trouble in organising the field-work, and of Messrs. J. Callow, G. Clementson, W. S. Cowin, H. A. Quillin and Miss Dorothy I. Teare for the large number of counts they made. Mr. K. Williamson, who

collated the data in 1938 and 1939, was unable to take part in this year's survey owing to his absence on military duties.

From the phenological point of view the fact that counts were carried out in 1938 and 1940 is of especial interest. The former was the mildest and driest spring on record,³ and although official figures for this year have not been published there is no doubt that the winter was the most severe of the century. It is, therefore, possible to study the variation in the population of nesting rooks over the same wide area under extreme weather conditions.

To our mind a rookery is a group of nests built in close proximity to each other. Therefore, while one nest cannot be regarded as a rookery, two or more certainly constitute an admissible group and have accordingly been taken into account.

Normally the Rook nests in tall trees, and any kind of tree appears to be suitable; elm, horse-chestnut, sycamore, beech, Scots pine and larch are most frequently used in Man according to their abundance in particular areas. In 1938, and again in 1940, a pair of rooks nested on the top of a chimney stack at Folieu, Maughold, and in the former year succeeded in rearing their young. Rooks do not nest at any great height above sea-level in the Island, because of a lack of timber at high altitudes. Montpelier (76 nests) and Injebreck (195 nests) are each about 800 feet above sea-level, and are among the Central hills, while at Lhergyrhenny a small rookery of four nests existed in 1938 at a height of 850 feet.

The comparative figures for the two years are as follows: rookeries uncounted in 1940 being taken in at 93 per cent. of the 1938 figure, and those uncounted in 1938 at 108 per cent. of the 1940 figure.

LIST OF ROOKERIES.

<i>District.</i>	<i>No. of nests, 1938.</i>	<i>No. of nests, 1939.</i>	<i>No. of nests, 1940.</i>
I. TOWN OF CASTLETOWN.			
1. Bank Street	12	—	0
2. Shore Road	0	—	c. 10
	—	—	—
	12	—	c. 10
	—	—	—
II. TOWN OF DOUGLAS.			
3. Brunswick Road . . .	24	17	17
4. Derby Road and Broadway	8	—	7
5. Derby Square	8	—	7
6. Drill Hall	0	—	8
7. Falcon Cliff Glen . . .	30	—	29
8. Fort Anne and Harold Towers	10 (?)	50	36
9. Laureston	70	—	107
10. Olympia	12	—	6

The rookery at West Hill was not counted in any year.

<i>District.</i>	<i>No. of nests, 1938.</i>	<i>No. of nests, 1939.</i>	<i>No. of nests, 1940.</i>
II. TOWN OF DOUGLAS— <i>continued.</i>			
11. Peel Road rookeries (inc. Ballabrooie, Belmont, Burleigh, Mt. Vernon, The Priory and Thornton)	195	153	145
12. Pulrose House	27	32	25
13. Quarter Bridge	53	55	44
14. St. George's Churchyard . .	12	—	6
15. Summerhill	12	4	6
16. Villa Marina	4	3	2
17. Woodside, Laureston Road	26	—	21
	<hr/> 491	<hr/> —	<hr/> 466
III. TOWN OF PEEL.			
18. Ballaquane	26	—	25
IV. TOWN OF RAMSEY.			
19. Ballure	1	—	2
20. Court House	1	—	2
21. St. Olave's Church	5	—	7
	<hr/> 7	<hr/> —	<hr/> 11
V. PARISH OF ANDREAS.			
22. Ballachurry	110	—	110
VI. PARISH OF ARBORY.			
23. Parville, Ballabeg	(122)	120	115
Ballaclogue held 21 nests in 1939.			
VII. PARISH OF BALLAUGH.			
24. Ballacain	6	—	(6)
25. Ballamona Beg	29	—	(29)
26. Ballaugh Old Church . . .	0	—	c. 12
27. Bishop's Glen	213	—	c. 85
	<hr/> 248	<hr/> —	<hr/> c. 132
VIII. PARISH OF BRADDAN.			
28. Ballacubbon	7	4	0
29. Ballamillaghyn	11	—	5
30. Ballig, West Baldwin . . .	7	18	6
31. Braddan Old Church . . .	45	—	46
32. Creg-y-Cowin	26	—	(26)
33. Farm Hill	22	8	5
34. Harcroft	7	10	7
35. Injebreck	215	—	c. 195
36. Kirby	335	360	358
37. Mount Rule	9	24	16
38. The Nunnery	317	289	239
39. Springfield	12	—	12
40. Spring Valley	9	6	9
41. Snugborough, Union Mills	2	—	2
42. Tromode	10	—	3
43. White Hoe Cottages . . .	10	—	10
	<hr/> 1044	<hr/> —	<hr/> 939

<i>District.</i>	<i>No. of nests, 1938.</i>	<i>No. of nests, 1939.</i>	<i>No. of nests, 1940.</i>
IX. PARISH OF BRIDE.			
We know of no rookery in this parish in either 1938 or 1940, and P. G. Ralfe found none in 1923.			
X. PARISH OF GERMAN.			
44. Ballagarraghyn . . .	9	—	21
45. Ballacraine and Orchard Bungalow . . .	114	115	107
46. Ballagyr Beg . . .	6	—	8
47. Ballagyr Moar . . .	46	—	44
48. Ballawattleworth . . .	10	—	15
49. Glyn Moar, St. John's . .	72	87	60
50. Hawthorn Inn . . .	16	—	2
51. Lherghydoo and the Glaick Plantation . . .	180	—	142
	<hr/> 453	<hr/> —	<hr/> 399
XI. PARISH OF JURBY.			
52. Ballacain . . .	147	—	104
53. Ballamoar . . .	(42)	—	c. 40
54. Summerhill . . .	92	—	(88)
	<hr/> 281	<hr/> —	<hr/> c. 232
XII. PARISH OF LEZAYRE.			
55. Ballachrink . . .	12	—	(12)
56. Ballakillingan . . .	(203)	—	190
57. Ballakirka . . .	42	—	(41)
58. Milntown . . .	45	—	32
59. Thornhill . . .	(203)	—	190
60. Tholt-e-Will . . .	91	—	62
	<hr/> 596	<hr/> —	<hr/> 527
XIII. PARISH OF LONAN.			
61. Christ Church, Laxey . .	115	—	122
62. Dhoon Quarries . . .	0	—	11
63. Minorca Hill and Old Laxey	52	11	31
64. Shore Road and Glen, Laxey	70	—	72
	<hr/> 237	<hr/> —	<hr/> 236
XIV. PARISH OF MALEW.			
65. Ballacallin . . .	(19)	20	19
66. Ballahick . . .	5	(5)	(5)
67. Ballaquaggan . . .	20	6	9
68. Ballasalla Church . . .	4	18	6
69. Ballasalla Station . . .	2	7	6
70. Ballasalla Village and Rushen Abbey . . .	73	73	61
71. Ballavarvane . . .	100	90	110
72. Sunny Orchard . . .	0	27	17
	<hr/> 223	<hr/> 246	<hr/> 233

Ballakew held 55 nests and Derbyhaven about 6 nests in 1939.

<i>District.</i>	<i>No. of nests, 1938.</i>	<i>No. of nests, 1939.</i>	<i>No. of nests, 1940.</i>
XV. PARISH OF MAROWN.			
73. Ballafreer	100	84	90
74. Crosby	40	25	14
75. Ellerslie	0	11	16
	<hr/> 140	<hr/> 120	<hr/> 120
XVI. PARISH OF MAUGHOLD.			
76. Ballaglass	81	—	c. 140
77. Cardle Voar	61	—	24
78. Dhoon Vicarage . . .	81	—	100
79. Folieu Farm	12	—	18
80. Folieu House	56	—	102
81. Glen Mona	4	—	(4)
	<hr/> 295		<hr/> c. 388
XVII. PARISH OF MICHAEL.			
82. Michael Village . . .	19	—	c. 48
83. Montpelier, Druidale .	35	—	76
84. Orrisdale	27	—	22
85. Little London	127	—	(121)
86. Whitehouse	148	—	c. 107
86a. Lhergyrhenny	4	—	(4)
	<hr/> 360		<hr/> 378
XVIII. PARISH OF CONCHAN.			
87. Howstrake Hotel . . .	0	—	2
88. Ballacurrie Orchard . .	(3)	—	3
89. Nursery Hotel	(62)	—	59
90. St. Peter's Church . . .	46	—	56
91. Sea View, Conchan . . .	118	—	c. 136
	<hr/> 229		<hr/> c. 256
XIX. PARISH OF PATRICK.			
92. Ballacallin	85	—	78
93. Ballacosnahan	5	—	(5)
94. Ballamoar	183	—	177
95. Brookfield, Foxdale . .	40	42	31
96. Glanfaba	150	—	146
97. Kennaa	140	93	(130)
98. Raggatt	3	—	0
	<hr/> 606		<hr/> 567
XX. PARISH OF RUSHEN.			
99. Ballachurry Orchard . .	5	7	5
100. The Plantation, Port St. Mary	(82)	72	78
101. Rocklands and High St., Port. St. Mary	20	11	10
	<hr/> 107	<hr/> 90	<hr/> 93

Other rookeries counted in 1939 : Ballashillague, 63 nests ; Bradda, 30 nests ; Ballagawne, 3 nests.

<i>District.</i>	<i>No. of nests, 1938.</i>	<i>No. of nests, 1939.</i>	<i>No. of nests, 1940.</i>
XXI. PARISH OF SANTAN.			
102. Mount Murray . . .	(87)	90	81
103. Oatlands . . .	(58)	68	50
104. Ballashamrock . . .	4	0	0
	<hr/> (149) <hr/>	<hr/> 158 <hr/>	<hr/> 131 <hr/>

Collecting these figures into towns and parishes, the result is :

<i>District.</i>	<i>No. of Nests, 1938.</i>	<i>No. of Nests, 1940.</i>
1. Town of Castletown . . .	12	10
2. „ Douglas . . .	491	466
3. „ Peel . . .	26	25
4. „ Ramsey . . .	7	11
5. Parish of Andreas . . .	110	110
6. „ Arbory . . .	122	115
7. „ Ballaugh . . .	248	132
8. „ Braddan . . .	1044	939
9. „ Bride . . .	0	0
10. „ German . . .	453	399
11. „ Jurby . . .	281	232
12. „ Lezayre . . .	596	527
13. „ Lonan . . .	237	236
14. „ Malew . . .	223	233
15. „ Marown . . .	140	120
16. „ Maughold . . .	295	388
17. „ Michael . . .	360	378
18. „ Conchan . . .	229	256
19. „ Patrick . . .	606	567
20. „ Rushen . . .	107	93
21. „ Santan . . .	149	131
	<hr/> 5736 <hr/>	<hr/> 5368 <hr/>

From these figures it will be seen that of the 21 districts only five show an increase, and in only one, Maughold, is this substantial (31·5 per cent.). The parishes of Conchan, Malew and Michael, and the town of Ramsey register slight increases only. There is no doubt, therefore, that more rooks nested in the Island in 1938 than in 1940. The comparative figures for the two years, 5736 and 5368 nests, show a decrease of 6·3 per cent. in the latter year.

The number of rookeries is almost stationary. In 1940 there were 110. (Certain small colonies close to each other, such as the Peel Road rookeries, are counted together in the above table.) Two small rookeries, Ballacubbon in Braddan (7 nests in 1938) and the Raggatt in Patrick (3 nests in 1938) have since been deserted. Four new rookeries have been established in this period—at Sunny Orchard in Malew, the Dhoon Quarries in Lonan, Ellerslie in Marown, and at

Ballaugh Old Church. At Castletown the rooks have apparently shifted the site of a rookery from Bank Hill to Shore Road.

The average size of the colony is 48·8 nests on the 1940 figure. This is slightly larger than the average size of the rookeries in the Midlands.

The largest rookery is that on the Kirby estate, Braddan ; if the nests in Kirk Braddan churchyard are included the total number is 404. Next in size is the Nunnery rookery with 239 nests. No other rookery exceeds 200 nests, but three—Injebreck in Braddan and Ballakillingan and Thornhill in Lezayre—fall just short of this figure.

From the available figures it will be seen that there is a higher rook population in the Island than in most parts of England for which we have comparative figures. Scotland, however, would seem to support a still higher rook population in the Lowlands. The high figure in proportion to the area of arable and agricultural land is probably influenced by the facts that a considerable number of rooks regularly resort to the hills to feed, and smaller numbers are to be seen on the rocky shores at low tides. Yet again, rooks are tamer in the towns than in the country and feed in the streets and gardens of private houses without interference.

The following are the comparative figures for the Island and other parts of England and Scotland, the Manx figures being those for 1938, as the agricultural figures for this year are, of course, not yet available.

DISTRICT	Area in Sq. miles	Approx. No. of Nests	No. of Rookeries	Nests per Sq. mile	Area to each Rookery	Acres of Crops and Grass per Nest	AUTHORITY
Aberystwyth .	c.250	1,550	—	6	—	56	Walton (4)
Berwickshire .	464	21,000	—	45	—	—	Muirhead (5)
Derbyshire .	1,009	10,620	240	10·5	4·2	42·4	Roebuck (6)
Dumfriesshire .	1,106	16,000	—	14	—	—	Gladstone (7)
Isle of Man .	227	5,736	110	20·8	2	13·2	Williamson & Cowin
Isle of Wight .	146	4,200	74	29	1·9	15	Wynne (8)
Lanarkshire .	880	23,800	—	27	—	—	Stewart (9)
Leicestershire .	800	9,381	230	11·7	3·5	48·2	Roebuck (6)
Lincolnshire—							
(a) Holland .	418	4,412	118	10·5	3·5	54	Roebuck (6)
(b) Lindsey .	1,357	22,447	442	16·6	3	37·6	Roebuck (6)
(c) Kesteven .	726	8,432	160	11·6	4·5	48·4	Roebuck (6)
Midlothian .	366	5,820	—	16	—	—	Nash (10)
North Wales .	c.1,750	8,000	—	5	—	84	Walton (4)
Nottinghamshire	843	6,501	182	7·7	4·6	64·4	Roebuck (6)
Oxford . . .	224	6,750	101	30	2·2	—	Nicholson (11)
Rutlandshire .	152	2,340	49	15·4	3·1	37	Roebuck (6)
Somersetshire .	1,636	35,643	660	21·8	2·4	22·2	Tucker (12)
Upper Thames District . .	910	30,500	—	33·5	—	15	Alexander (13)

In considering the distribution of the rookeries it may be of interest to consider the distribution with regard to their size. This is worked out in the following table :

<i>Size of Rookery.</i>	<i>No. of Rookeries.</i>
2- 20 nests.	47 rookeries.
21- 40 ,,	22 ,,
41- 60 ,,	8 ,,
61- 80 ,,	8 ,,
81-100 ,,	4 ,,
101-120 ,,	8 ,,
121-140 ,,	4 ,,
141-160 ,,	1 ,,
161-180 ,,	2 ,,
181-200 ,,	3 ,,
Over 200 ,,	1 ,,
	<hr/> 108 <hr/>

Certain rookeries classed together in the list are here considered separately.

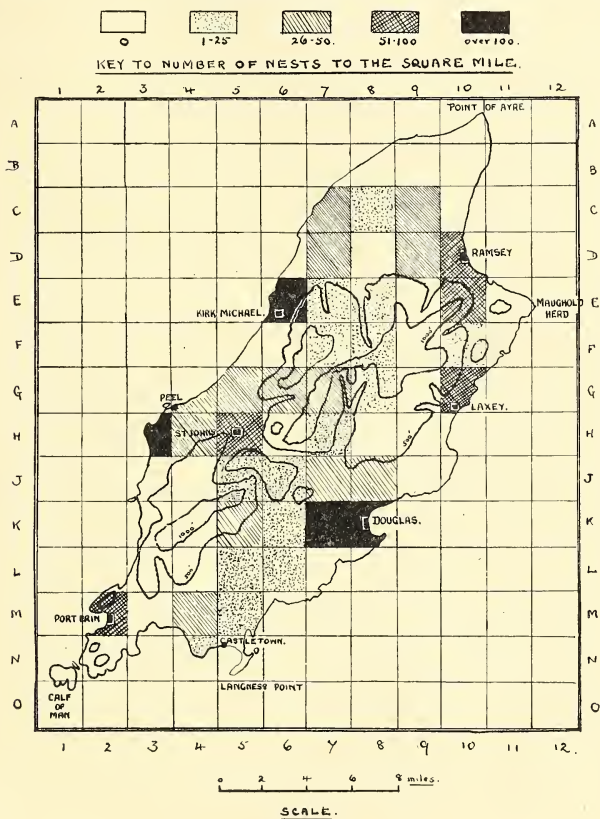
Thus, in the Isle of Man, 69 out of 108 rookeries, or 63·8 per cent., contain less than 40 nests. In Somerset almost the same percentage, 423 out of 668 rookeries, or 63·3 per cent., contain less than 50 nests. In the Isle of Wight, 37 out of 74 rookeries, exactly 50 per cent. contain less than 40 nests. In all these districts smaller rookeries are commoner than large ones, and it seems safe to say that the commonest size for a rookery is under 20 (B. W. Tucker¹² says 25) nests.

Altitude is undoubtedly one of the factors deciding the site of a rookery. The distribution with regard to altitude is given below.

<i>Height above sea-level.</i>	<i>No. of Rookeries.</i>
0 to 50 feet.	17 rookeries.
50 to 100 ,,	38 ,,
100 to 150 ,,	16 ,,
150 to 200 ,,	13 ,,
200 to 250 ,,	7 ,,
250 to 300 ,,	2 ,,
300 to 350 ,,	2 ,,
350 to 400 ,,	5 ,,
400 to 450 ,,	4 ,,
450 to 500 ,,	2 ,,
500 to 550 ,,	0 ,,
550 to 600 ,,	0 ,,
600 to 650 ,,	2 ,,
650 to 700 ,,	0 ,,
700 to 750 ,,	0 ,,
750 to 800 ,,	2 ,,
	<hr/> 110 <hr/>
	,, (inc. Ballacubbon and the Raggatt).

From this it will be seen that 84 out of 110 rookeries, or 76 per cent., lie below the 200 foot contour. These contain 3816 out of 5364 nests, or 81.2 per cent. of the total number. This is almost the same as in the Isle of Wight, where 90 per

MAP TO SHOW DENSITY OF ROOK POPULATION IN I.O.M.



cent. of the nests lie below 200 feet. In Somerset, however, only 52.4 per cent. of the nests lie below this height.

That mere altitude is no bar to the establishment of a rookery is shown by the fact that in Derbyshire 30 rookeries exist above the 1000 foot contour, while in Somerset rooks nest up to 1350 feet. While no definite assertion can be made it would almost seem that when colonies do exist at a high altitude they are usually substantial in size, and this would seem to be borne out by the data from Somerset.

We are now ready to attempt an analysis of the distribution

and density of the Rook population. On the accompanying map the density has accordingly been plotted. The above squares are those shown in the 1-inch Ordnance map which have sides of 2 miles and an area of 4 square miles. The number of rooks' nests in each of these squares has been calculated and divided by four to give the average density of nests per square mile for each square. Owing to the irregular outline of the Island, the method adopted by B. W. Tucker¹² in dealing with the rookeries of Somerset has been followed. Where the squares are cut into by the coast, the area of the portion of the land has been roughly calculated and the density for this area worked out.

A glance at the map immediately reveals three facts. Firstly, the highest density of the rook population corresponds to the position of the larger towns and villages; secondly, the absence of the rook on the high ground in the south-west of the Island; and thirdly, its scarcity in the low-lying land of the northern plain.

The most densely populated parts of the Island are those adjoining the towns and villages; Douglas and Braddan (K7 and K8), Michael (E6), Peel (H3), Ramsey (D10 and E10), Laxey (G10), St. John's (H5), and Port Erin (M2). In fact, the only town which has not a corresponding high rook population is Castletown.

It is obvious that the rook likes to nest in the vicinity of man and in the Island it must be remembered that no trees existed until the nineteenth century. Townley, writing in 1789, says he wonders where suitable breeding-places could be found, 'a wood, a lofty grove, or even a holt of trees being an object very rare to be met with.' Townley found only one colony of rooks near the Nunnery, but about the commencement of the last century systematic tree-planting began and the rook is now an abundant and flourishing species.

In the vicinity of Douglas the rook builds freely in the gardens of private houses and is rarely persecuted at the rookery. It is, in town, so tame that it feeds freely in the streets and gardens. The abundance of suitable sites and the freedom from persecution are certainly the main factors in the dense rook-population of Douglas. The square, K8, contains 699 nests, yet land occupies only three-quarters of its area; therefore it is actually more densely populated than the Wallingford area of the Upper Thames, the most densely populated of the districts yet surveyed, where one area of 4 square miles holds 753 nests.

These factors probably apply to the other towns, for it is only in the country that the rook is persecuted to any great extent.

The absence of rooks in the south-west highlands is caused

by the absence of trees probably directly due to the lack of farms in this area. Thus, in the northern part of the central chain of mountains where streams penetrate the hills and farms exist, rookeries and large ones at that, occur. Where there are no farms and no trees there are, of course, no rooks, *e.g.* in the North Barrule region.

The most puzzling feature is provided by the absence of the rook from Bride, the most northerly parish, and its scarcity in the neighbouring parishes of Jurby and Andreas, which with Bride make up the northern plain. What is the cause of this surprising scarcity? For ourselves, we think it is probably caused by the absence of rivers and streams. It is not caused by lack of trees, for plenty exist around the farms. The northern lowland consists of alluvial soil and is remarkable in that not one river meanders across it to the sea. Water exists at no great depth, and nearly every farm has its own well to supply it with water. In the region of Sulby, we have been informed that there are over sixty wells in an area of one square mile. There are ponds—'dubs' as they are called in the Island—in plenty, but rooks are rarely, if ever, seen at them.

The consensus of opinion among authorities is summed up by L. C. Lloyd¹⁴ who says that the opinion 'generally held among those most competent to judge is that rivers and streams are attractive to rooks, not for their own sake, but on account of the rich feeding grounds which they provide in the meadows which border them.' This is supported by the fact that a series of counts made over a period of several months and extending over the harvest period show that approximately three-quarters of the birds feed in rich fields used for cattle pasture. It may, therefore, be assumed that the absence of the rook from Bride is due to a lack of pasturelands caused by the absence of rivers and streams.

In conclusion we should like to thank Mr. W. B. Alexander and the British Trust for Ornithology for the valuable assistance given to us.

SUMMARY.

1. Censuses of rookeries in the Isle of Man were made in the springs of 1938 and 1940, and the data compiled is recorded herewith.
2. As these winters were exceptionally mild and extremely severe respectively, these figures are of interest from the phenological aspect. These show a decrease of 6.3 per cent. on the 1938 figure in 1940.
3. Comparisons with available figures from parts of England and Scotland show that while the Rook population of the Island is greater than that of most parts of England, Scotland would seem to support a still denser Rook population.
4. The distribution of the rookeries with regard to their size and altitude is worked out.
5. An analysis of the density and distribution of the Rook population of the Island is attempted.

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YORKSHIRE NATURALISTS' UNION

BOTANICAL SECTION

THE Annual Meeting of the Botanical Section was held on Saturday, October 5th, in the Botany Common Room, Leeds University, by kind invitation of Professor J. H. Priestley.

Last year the meeting was not held owing to the outbreak of the war and difficulties of lighting and travel, but now by meeting early and not attempting an evening session, we had a good representative attendance.

Nominations for Officers and Committees were made for election at the General Committee Meeting in December. The reports of the various Committees were presented and discussion resulted on the effect of the hard winter and the following drought on the vegetation, and also on the subject of the increasing mortality in the Juniper scrub on Moughton. In discussing this subject Professor Pearsall's theory of a 'drying up of the area' (*Nat.*, 1940, p. 209) was thought unacceptable as adjacent areas do not seem to be affected in this way and also seeing that other similar large areas both East and West of Thieves Moss have died off in a like manner during the last fifty years. Mr. Wattam had searched diligently but without success for seedlings and it was thought that experiment with protected seed beds would be helpful. When a large area of the Juniper scrub dies off, the absence of seedlings is a matter needing explanation and the fact that the rabbit does eat seedlings does not quite settle why there are none in odd places out of reach of this pest.

A welcome cup of tea was provided by Mrs. Priestley, helped by her daughter and Miss Scott, and a hearty vote of thanks was carried to Professor and Mrs. Priestley for making us such a useful and pleasant meeting.

THE GREAT FROST AND AFTER

Its Effect on the Bird Life of the North - West

SYDNEY MOORHOUSE

THE effects of the spell of severe weather that heralded the opening of 1940 have been long extended and throughout the spring and summer months it has been interesting to note how certain types of birds suffered from the abnormal climatic conditions.

Snow fell in the night December 27th-28th, 1939, and there were intermittant falls during January. A heavy fall of snow occurred on February 3rd, and there were further falls in the next few days, no thaw being experienced until February 14th. The Lune Estuary and large tracts of Morecambe Bay were frozen during the time and while many of the smaller lakes of North Lancashire and Westmorland were also frozen over, always some clear water remained in Windermere.

Among the birds which suffered the most might be mentioned the Kingfisher, and Mr. H. Murray, the Carnforth taxidermist, told me that three Kingfishers were brought in to him in eight days between January 4th and 12th, each of which had been found in a starved condition. It would appear that these birds suffered heavily in the early part of the year and throughout the summer there has been a dearth in North Lancashire and Westmorland.

Song Thrushes also seemed greatly affected by the inclement weather and the early part of summer showed a reduction in their numbers. Blackbirds, on the other hand, seemed little affected.

Moorhens found the frozen waterways a great trial and on more than one occasion I watched these birds foraging for food in poultry runs and similar places. Their numbers were greatly reduced and not until the end of summer and the broods of youngsters were about did the bird show any signs of regaining its lost status.

During late January and February large numbers of Black-headed Gulls perished, and on February 3rd I found a Grey-lag Goose completely frozen into the marsh near Silverdale. Herons, too, perished in large numbers and, as I pointed out in a recent issue (Notes on a Westmorland Heronry, July 1940) the birds were late in returning to their old nesting haunts at Dallam Park, Milnthorpe.

February saw several rare species in the district. A Bittern was seen on Carnforth Marsh in the early part of the month and another found sanctuary in Parsonage Bay, Windermere. A Greenland Falcon was also reported from Ambleside; several Whooper Swans were seen in different

parts of Morecambe Bay (probably having left the frozen Lakeland tarns for the shore), and during the last week of the month a Reeve was seen on Carnforth Marsh.

The dates of arrival for the various summer migrants assume a special interest this year and those I have recorded in connexion with the Phenological Report of The Royal Meteorological Society are: Chiffchaff, March 22nd; Willow Warbler, April 10th; Swallow (first bird), April 18th (seen in numbers), April 22nd; Cuckoo, April 24th; House Martin, April 18th; Whitethroat, April 24th; Swift, May 2nd; Corncrake, May 13th; and Spotted Flycatcher, June 5th. The early spring songs were: Blackbird, February 9th; Lark, February 22nd; and Chaffinch, February 29th. I heard the last Cuckoo on the southern side of Morecambe Bay on June 19th.

Undoubtedly one of the most interesting features of the summer was an apparent increase in the number of Corncrakes in Westmorland. Cuckoos, too, were exceptionally plentiful.

BRITISH CHARIOTS 2,000 YEARS AGO

NEARLY a hundred bronze trappings and ornaments, evidently the entire equipment for a pair of chariot horses of the late Bronze Age, found at Abergele, North Wales, differs from anything of the kind ever found in the British Islands. They have just been purchased by the National Art Collections Fund and presented to the Mortimer Museum at Hull. A representative selection is being made for exhibition in the National Museum of Wales at Cardiff.

NEWS FROM THE MAGAZINES

The Entomologist's Record for October contains 'New Generic Names for Microlepidoptera,' by T. B. Fletcher; '*Iodis lactearia* L.', by C. R. N. Burrows; 'Collecting Notes, Current Notes and Supplement, 'The British Noctuae and their Varieties,' by H. J. Turner.

The Entomologist for October contains '*Lysandra coridon*'; its reputed occurrence in Lancashire and Westmorland,' by A. E. Wright; 'Migration of *Colias lesbia* in the Argentine in 1940,' by K. J. Hayward; 'A correction of some recently published statements on the specific names of Certain European species of *Erebia*,' by B. C. S. Warren; 'Description of three new Hesperiidæ (Lepidoptera) from China,' by Brig. W. H. Evans; 'Some notes on migrant lepidoptera in Syria, Iraq and Iran,' by E. P. Wiltshire; and numerous notes and observations.

The Entomologist's Monthly Magazine for October contains 'Results of the Oxford University Expedition to Sarawak (Borneo), 1932, Rhopalocera (Lepidoptera),' by B. M. Hobby; 'Extensive destruction of *Pieris brassicae* L. (Lep.) by birds,' by G. D. Hale Carpenter; 'Observations on the soil of the mounds of the mining bee, *Andrena armata* Gmelin. (*fulva* Schrank),' by W. Pickles (these observations were carried out at Ledstone Park, Yorks.); 'A new British *Tenthredo* of the *arcuata-schæfferi* complex with a key to the European species (Hym. Symphyta),' by R. B. Benson; '*Pocota personata* (Harris 1776) = *apiformis* Schenk, 1781 (Dipt. Syrphidæ): occurrences in Britain,' by B. M. Hobby; and several shorter notes.

HISTORICAL ECOLOGY OF THE FUNGI¹

JOHN GRAINGER

THE ecological study of fungi began in Yorkshire more than a hundred and fifty years ago, and began, I am proud to say, in that concentrated corner of the West Riding of Yorkshire, which was my birthplace. Leaders there will always be, ahead of their contemporaries, but it is given to few pioneers to remain in the intellectual forefront for a century and a half. James Bolton's *History of Fungusses growing about Halifax* was printed in Huddersfield in 1788, in the spacious days when craftsmanship had not been outrun by time, and it can still be read with refreshment, whilst its present solid worth is evinced by the following extracts :

'Some observations may be made in regard to constancy of place, in the plants of this order. The *Agaricus integer* (*Russula Cyanoxantha*² (Schaeff.) Fr.), [*A.*] *villosus* (*Pholiota destruens* (Brond.) Fr.), [*A.*] *purpureus* (*Tricholoma ionides* (Bull.) Fr.), etc., the *Boletus luteus*, (*B. subtomentosus* (Linn.) Fr.), and [*B.*] *bovinus* (*B. luridus* (Schaeff.) Fr.), *Clathrus nudus* (*Stemonitis ferruginea* Ehrh.) and [*C.*] *denudatus* (*Trichia Botrytis* Pers.), I have constantly observed to make their appearance at their respective seasons, in one and the same place ; on the contrary, the *Agaricus elephantinus* (*Russula nigricans* (Bull.) Fr.) grew abundantly in the shroggs, and several other woods about Halifax, in October, 1786 ; this present year, 1787, I have not found more than one or two plants of it.

'In the year 1785, the *Peziza cornucopioides* (*Craterellus cornucopioides* (Linn.) Fr.) came up abundantly in one place, in the last-named wood, but has not since grown there.

'In September, 1777, the *Halvella mitra* (*H. elastica* Bull.) grew plentifully in several woods, in hedges, under trees, and even in pastures and meadows, in this neighbourhood ; and since then, in the space of ten years, though my researches have been regularly kept up, I have not met with more than three or four specimens of that rare plant.'

'Some species of Fungi are perennial and abiding, as the *Sphaeria tuberculosa* (*Hypoxyylon fuscum* (Pers.) Fr.) ; others, though they die and fall away annually, have an abiding or perennial root, as the *Sphaeria hypoxyylon*.

'The *Phallus impudicus*, a rare plant here, I have observed to grow three successive years, in the same hand's breadth of ground, though I took up the plant with its radical cord, both the first and second year. Its time is in October.'

Again in Vol. 2 :

'The *Halvella inflata* has, for several years past, grown plentifully in the plantations about Fixby Hall, near Huddersfield ; it makes its annual appearance in two or three particular places in those fertile woods, and I never met with the plant in any other place, though I have often sought it in similar soils and situations.

'The *Hydnum imbricatum* (*H. repandum* (Linn.) Fr.) has at its season, for more than twenty years successively, grown in one part of North Dean, near Halifax : though I have very rarely seen it elsewhere in this neighbourhood.

'Some of the parasitic Boleti are perennial and abiding, growing and increasing from year to year, as the *Boletus igniarius* (*Fomes igniarius* (Linn.) Fr.), and amongst the Agarics the [*A.*] *quercinus* (*Daedalea*

¹ Chairman's address to the Mycological Section, Y.N.U., delivered at Kilnsey, Grassington, on Saturday, September 14th, 1940.

² The names within round brackets are the modern names, used in *A Catalogue of Yorkshire Fungi*, equivalent to those given by Bolton.

quercina (Linn.) Fr.), others which are of a more perishable nature, and serve as food to the numerous brood of various kinds of insects, I have found to grow annually from the same spot, as the *Boletus squamosus* (*Polyporus squamosus* (Huds.) Fr.) and the *Boletus hepaticus* (*Fistulina hepatica* (Huds.) Fr.).

'The *Boletus elegans* (*Polyporus giganteus* (Pers.) Fr.) which was found in the hollow of an old elm tree root, in August, 1786, did not make its appearance there in 1787, but this present year 1788, on the 28th of July, another specimen grew in the self same spot: so that this species seems to be biennial in its nature.'

Bolton here sets an example of simple, exact observation which still requires to be followed, and the knowledge is still new.

Bolton's personality is abundantly portrayed in his volumes. His charming, direct language, accurate drawings and his references to the work of other contemporary mycologists give confidence to the reader. The statement that his work is '—a plain Recital of Facts, the Result of more than Twenty Years Observation' rings true. His work has been reviewed critically by several authorities, and by consulting such works as Rea's *British Basidiomycetæ* it is possible to give the result of Bolton's twenty-year fungus foray in the names used in the *Catalogue of Yorkshire Fungi*. It is not necessary here to give the full list, but some of the chief features are instructive.

It is first important to realise that certain recurrent species of our present-day records were also the common kinds in the eighteenth century:

Russula cynoxantha.

Pluteus cervinus.

Lepiota cristata, *L. procera*.

Lactarius subdulcis.

Coprinus atramentarius, *C. comatus*, *C. radiatus*, *C. micaceus*.

Laccaria laccata.

Amanita rubescens.

Russula nigricans.

Hypholoma fasciculare.

Androsaceus androsaceus.

Psalliota campestris.

Marasmius oreades.

Anellaria separata.

Paxillus involutus.

Hygrophorus pratensis.

Galera tenera.

Polystictus versicolor.

Stereum hirsutum.

Clavaria fusiformis, *C. muscoides*, *C. rugosa*.

Bovista nigrescens.

Nectria cinnabarina.

Phylacteria terrestris.

These species seem to be typical permanent elements of the fungus flora of the country between Halifax and Huddersfield, and have apparently remained so for nearly a hundred and sixty years.

There are, however, some notable absentees, which could hardly have escaped Bolton's trained observation. No mention is made of any fungus which could be interpreted as *Stropharia semiglobata*, but this species is now ubiquitous upon dung. Nor was *Panæolus campanulatus* known to Bolton, though now quite common on dung, which supports the growth of *Anellaria separata*, reported by him as abundant in 1787.

Psilocybe semilanceata is now a common fungus in the Huddersfield area. It is, indeed, the only species found upon an otherwise mycologically barren hillside near a large industrial plant in the district. The reader will search in vain, in Bolton's volumes, for any description which

might be stretched by a sanguine taxonomist to include this species. There is no predominantly red species of *Russula* to correspond to *R. emetica* or *R. atropurpurea*. *Tricholoma rutilans*, given as rare in 1787, is now a persistently common fungus. *Collybia velutipes* vouchsafed an isolated appearance to Bolton, just in time to be included in the appendix, but its statistical chances of appearing to mycological gaze in twenty years must now be rated in hundreds. *Tricholoma nudum* was distinctly stated as rare in the eighteenth century, but can now be trusted to provide an ingredient of the Fungus Supper of the Berry Brow Naturalists' Society, held annually near Huddersfield.

These are all species which could not possibly now be missed by one student of the fungi in any one year; it also seems impossible that they formed a part of Bolton's twenty-year section of the country's flora. They must have appeared since his time.

Two other notable species had obviously just appeared in the Halifax flora. *Armillaria mellea*, though figured in various forms, was mentioned as rare, except in one particular habitat. It is now far too widespread in our local woodland. Documentary evidence of its presence through a century and a half shows, however, that its parasitism is by no means complete, and provides encouragement to those mycologists whose task is to study and control its activities upon economically valuable trees. *Polyporus betulinus* was so rare that Bolton had to reinforce one isolated record in Halifax with a report of its presence in Darlington. It can now be found with certainty wherever the Birch tree forms an element of the woodland flora, but the various species of the genus *Betula* are not in danger of extinction, as the fungus does not apparently attack trees younger than a certain age. What that age is forms the subject of a joint statistical enquiry with my sister.

Most of the polypores, indeed, with the exception of the ever-present *Polystictus versicolor*, are mentioned as rare or occasional in 1787. *Polyporus sulphureus*, *P. giganteus*, *P. squamosus*, *Fistulina hepatica*, and *Fomes ignarius* are in this class.

Bolton also speaks of *Phallus impudicus* as a rare plant, but its smell assaults the nose quite frequently at the present.

We therefore see that certain named species have provided the backbone of the fungus flora of a certain limited area in our county for over 150 years and that certain other taxonomic units have become very common during that time. Our fungus flora is neither static nor cumulative: it is dynamic; it changes.

I now suggest that our methods of recording are not the best to cope with a changing flora. Some more accurate way of assessing the frequency of a species is necessary if the records of our section are to have any future value. It is, perhaps, only individual work which can record, e.g. the total numbers of *Polyporus betulinus* in a particular wood, and say for how many years fructifications remain or emerge in the same place, but it should still be possible to maintain the social value of a fungus foray by counting the numbers and fixing positions as well as recording species.

The challenge of ecology is now laid upon the field mycologist. Species are described with a fair amount of exactitude, though there may still be squabbles about the limits of the finer species. Progress in a natural science depends upon ecological studies, once the ecologist can be taxonomically sure of his material.

Bolton's descriptions of fungi were usually the first in England, when they were not actually of newly-discovered species. The leaders of mycology in England include many names whose credit springs wholly or partly from the Mycological Committee of the Yorkshire Naturalists' Union. Our Committee fathered the formation of the British Mycological Society. Shall we initiate the newer study of mycological ecology in the field?

REVIEWS AND BOOK NOTICES

A Book of Animals, by Bryan Holme, pp. 96, with over 100 photographs and drawings of animals. Studio Publications, 6/-. This is a fine collection of pictures of animals, including cats and dogs, farm animals and those to be seen in this country only in zoological collections. They are all very well chosen, and some are of the very best of their kind. Characteristic attitudes have been caught with much skill and intimate knowledge, and some of the drawings are superb. The publishers say that 'An unobtrusive commentary is provided by the author . . . who, wherever possible, prefers to "let the animals speak for themselves."' Now and again Mr. Holme appears to have forgotten this excellent resolution. There are a number of titles which are fairly represented by these examples: 'Here, like a gooseberry, we have a hairy silhouette.' The baby Ostrich looks a bit like Donald Duck and just as irritable.' '“Mona Lisa,” . . . Smiling, yes, but we wonder how much she means it.' The latter is the title of a photograph of an alligator. We think plain titles would have been better, supplemented perhaps in some cases by appropriate short notes on natural history points.

A Key to the British Species of Plecoptera (Stoneflies) with Notes on their Ecology, by H. B. N. Hynes. Published by the Freshwater Biological Association of the British Empire, 1940, 39 pp., 1/6. This pamphlet is issued by the F.B.A. as No. 2 of a series of illustrated papers containing keys for the determination of the less well-known groups of freshwater animals. The idea of the series is excellent, as up to the present workers in freshwater biology have had to rely largely on scattered papers or on foreign publications. It should be noted that in the paper under review it is the adult 'flies' that are dealt with, while for freshwater workers the identification of the nymphs that inhabit the water presents the greater difficulty and is the more important. Perhaps this will be remedied in a later pamphlet. After an introduction, of which the most important section deals with the venation of the wings and the structure of the genitalia, the keys follow, for families based mainly on venation, and for genera and species based mostly on venation and genitalia, and occupy pages 11-30. This is the most important part of the work, and it is illustrated by numerous clear diagrams. By its aid there should be no difficulty in identifying any of the British species of flies. As the author states the differences in genitalia are not easy to describe, so the diagrams will probably be found the most useful portion of the work, especially for the Nemouridae. The section on Ecology gives the flight period of the adult and the type of habitat of the nymph. Regarding the first the author states 'I have not thought it advisable to include records published by some naturalists' societies, because reliable identification of stoneflies is a matter of some difficulty, and it is not always possible to rely on the determinations.' If the 'difficulty' had applied to the identification of the nymphs we might have agreed, but we cannot agree that observations published by other naturalists should be ignored in this way, especially when coupled with the suggestion that they may not be reliable. We are surprised to learn that *C. tripunctata* is 'rare in most parts of the country,' that for *C. vidua* 'the type of locality is unknown,' that the habitat of *C. nigra*, besides 'stony shores of lakes; also recorded from rivers in some localities in Great Britain' (we have always taken it in rapid brooks). In fact, we think that with few exceptions rapid stoney streams is the main habitat of most stonefly nymphs. The final section is a 3-page list of references. The pamphlet is well printed and illustrated and should serve its purpose well, and we look forward to the issue of similar ones dealing with other groups, and especially with nymphs and larvae which actually inhabit the fresh waters.—J. M. B.

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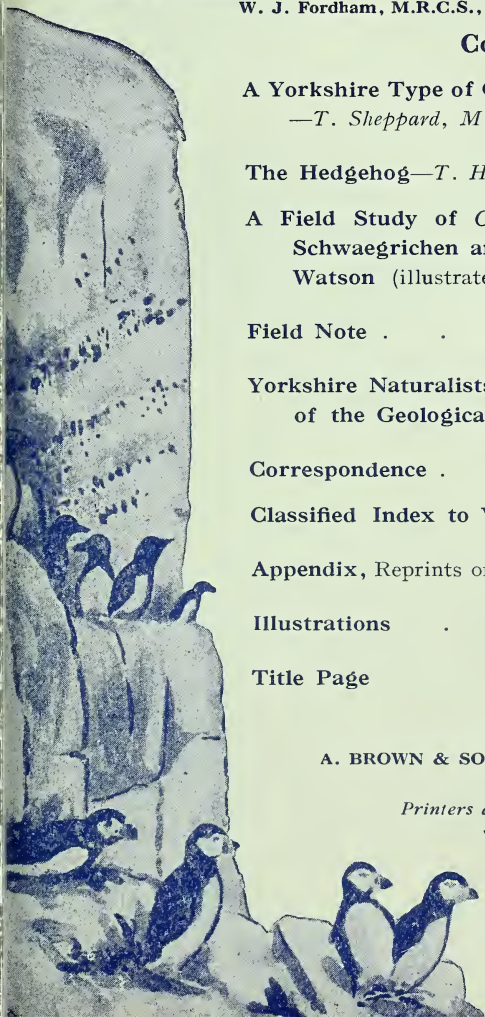
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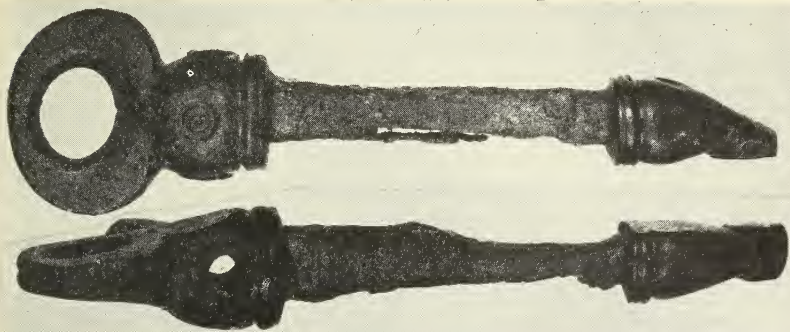
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A YORKSHIRE TYPE OF CELTIC LINCH-PIN

T. SHEPPARD, M.Sc.

THIS linch-pin, to use the words of Mr. J. B. Ward Perkins, in an article on 'Two Early Linch-pins, from King's Langley, Herts., and from Tiddington,' in *The Antiquaries Journal* for July, 1940, pp. 358-367, is evidently 'Of the type that was introduced into Yorkshire by the Parisi in the mid-third century B.C.,' and besides the example illustrated herewith, he quotes others as having been found at Arras and Stanwick in Yorkshire, in Suffolk, Cornwall, Essex, Hertfordshire, and Kent. He adds, 'They form a consistent group. The resemblances



between the individual specimens are sufficiently striking to suggest that they mark a single stream of development.'

The following record appears in J. R. Mortimer's *Forty Years' Researches in British and Saxon Burial Mounds of East Yorkshire*, 1905, pp. 359-360.

'In 1888, a find was made during the construction of the Driffield and Market Weighton Railway, in a deep cutting in the chalk between Middleton and Enthorpe stations. One of the navvies—a Driffield man—told me that on undermining the side of the cutting and letting down a mass of rock into the ballast waggon, a quantity of bones and rusted iron were observed, mixed with stones and soil, which they tipped over the end of the embankment. No further notice was taken of them, except that he put two or three pieces in his pockets. He gave me the pin, or bolt (Fig. 1022), but had lost the others. It is $5\frac{1}{2}$ in. long; the middle portion is of iron, $3\frac{1}{4}$ in. long, and half an inch square, to which are fixed two ends of solid bronze, one being in the form of a flattened ring. Its greatest diameter is $1\frac{1}{2}$ in., and the hole through it is sufficiently large to admit the end of one's little finger. About half an inch below this aperture, but diagonally opposite to it, is a second perforation, nearly a quarter of an inch wide. The edge of the ring is ornamented with zig-zag ridges within

sunken furrows. The other end of the pin resembles the head of a horse or dog. At each end of the pin one side is considerably worn, the other being only slightly worn. This article seems to be similar to two articles called "lynch-pins" from the so-called "King's barrow" on Arras, figured in "*Crania Britannica*," and thought to be connected with the yoke for the horses. It is also similar to one found on the estate of the Duke of Northumberland at Stanwick, and figured in the *Journal of the Archaeological Institute*, Vol. XXXI, Plate 4, Fig. 2. It is described to be an iron pin mounted at both extremities with bronze, supposed to have been attached to some part of a chariot. Length, 6 in. ; diameter of ring, 1 in.'

The figure given by Mortimer is rather 'squat' compared with the original, but is not very well defined, having been photographed from a water-colour sketch made by Miss Agnes Mortimer.

The linch-pin seems to be typically Yorkshire in type, and has points of resemblance to the Arras and Stanwick examples figured by Mr. Ward Perkins in his paper.

Possibly the example from the railway near Enthorpe has been cleaned since the sketch was made and a small circular hole drilled from the ring on the worn side of the pin suggests that a sample has been taken out for analysis, as it was filled in with dark wax.

The two central ridges of the four around the oval ring at the top have a distinct wavy pattern and on the flat part of the ring, on the left side, are five perpendicular striations, possibly made with a coarse file. In the centre of one side of the bulbous part below the ring are two small concentric circles, which may originally have appeared also on the opposite side, but if so are worn away by contact with the wheel, in the same way as is the inner side of the bronze ornament at the base.

The hole bored through the bulbous part in the same direction as the long diameter of the upper ring, is well made, and has a circular ridge surrounding it at each side. A double ridge forms a collar just above the top part of the squared iron centre-piece. A similar collar is on the upper part of the lower ornament, which is flattened and presumably was circular before worn on one side by contact with the wheel. There are remains of a groove around the circular part, and there is a slight ridge from the collar to the base of the outside of this part which 'resembles the head of a horse or dog.'

In the Chariot Burial which I excavated at Hunmanby in 1907¹ although the tyres of the wheels, bridle bits, etc., were found, there was no trace of the linch-pins, though these may have been thrown away before I started digging.

¹ See *Yorkshire Archaeological Journal*, Part 76, and *Hull Museum Publication* No. 47.

THE HEDGEHOG

T. HYDE-PARKER

WE have heard a good deal of late years concerning the toll of the road, principally, of course, from the purely human standpoint, but also as it affects our animal population; and it has often struck me that, in our own part of the country, anyhow, few mammals suffer more from this cause than does the hedgehog. Yet so seldom is this interesting little beast seen that it is safe to say that these mangled victims of the motor are the only specimens many people ever come across.

Actually there is little doubt that, in most rural districts, the hedgehog is far more plentiful than is suspected even by the local inhabitants, and this is due, partly to his nocturnal habits, partly to his skill in hiding himself during the day, and also, of course, to his hibernating during a good part of the year. Occasionally one may be noted plodding along in broad daylight, but the dusk is the time to watch them, especially if you happen to know of a nest or favourite haunt. When a hedgehog is observed during the day it is usually quite easy to follow him, for his movements are normally slow—rather pottering, in fact—and his sight far from keen. I recollect once in North Derbyshire thus following one closely for some way across a grass field, when the discovery that I, in turn, was being steadily tracked by a bull, led to the suspension of my scientific investigations! Hedgehogs are supposed to have a fairly keen sense of smell, but perhaps we were going up wind. They certainly possess a scent of their own, as dogs find them very readily. Of this distinctive odour they are themselves, presumably, unconscious, but the same can scarcely apply to the presence of various parasites with which, like the mole, they are often infested.

It is perhaps superfluous to remark that hedgehogs belong to one of the oldest genera of existing mammals and that small group in which the hair of the back has been developed into sharp spines. In this particular species these are so stout, while not at all brittle, that the Romans are reputed to have utilised the dorsal skin in hackling hemp for the weaving of cloth. Its other distinctive feature lies in that muscular power which enables it to roll up in a ball and remain so despite every effort to make it relax—though the fox is said to employ special measures to effect this. It has no neck to speak of, is plantigrade, and the long footprints show five distinct claw-marks.

The Hedgehog (the sexes are termed boar and sow respectively) is so called from his long, pig-like snout. This is

certainly the only point of resemblance, for the little rounded ears are as dissimilar as possible, while the rather humped back and very short legs, far from being porcine, give the animal more the appearance of one of those clockwork mice of our childhood. An old copy of Buffon I have states that there are two kinds, 'one with a nose like the snout of a dog, while the other is shorter and blunter,' but this distinction is no longer recognised.

Breeding takes place in the early summer, but there is occasionally a second litter, which would account for a brood of tiny infants, turned up here by the reaper in the second half of August. Such nests as I have examined were mostly composed of quantities of dry grass. The newly born young are only about a couple of inches in length; they are blind, and also naked but for an oval, slaty-grey patch or mantle which covers the back and in which the immature quills are set. These are white, and, though at first not much thicker than stout bristles, very soon become stronger and distinctly sharp, though of no use as a protection, as the power of rolling up has not yet been acquired. There is also visible, at this stage, an absurd little stump of a tail not more than $\frac{1}{8}$ in. long.

The mother is very attentive to her family all day. In a nest in the garden here, cunningly contrived under a shrub, with the opening facing the fence and so, out of sight, we were given an opportunity for discreet study of their domestic economy. About sunset each day you could, if you listened attentively, hear her talking to her youngsters, much in the tone a hen adopts at the time the eggs are 'spretching'—as they say in these parts—presumably enjoining them to be good while she went away foraging.

The young, even when grown up a bit, continue to be very fond of milk, and, as they venture forth on their own, may easily be induced to patronise an extraneous supply. I have more than once seen a whole family of these light-coloured youngsters ranged round a saucer that had been set for them. One of these might, of course, be easily tamed, and would be of real use in the garden—or even indoors, if induced to enter, for they are reputed to rid a house of cockroaches, a pest which few mammals will tackle. Gilbert White credited them with digging up and devouring the roots of plantains. I only wish they would eat *mine*, but I have never detected any sign of this proclivity. There are many authenticated instances of hedgehogs killing and eating snakes, but this again I cannot confirm from personal observation, for, though we have lots of hedgehogs here, we have no snakes, while in Argyllshire, where my boyhood was spent, the exact reverse was the case.

It is not, perhaps, generally realised that the hedgehog is quite a good swimmer, though he doesn't often indulge in this form of exercise. A jobbing gardener here once told us of an instance. It appeared that, when a boy, he had one as a pet, and all went well until, one unlucky day, his small sister inadvertently sat on it—with dire results. 'Mi father wer reight vexed,' he said, 'an' took an' swaaled it inti t' beck—we was livin' nigh-hand a beck at t' tahm. Ah starts roorin' fer ah thowt it'd be droonded for sure, but pricky-back jist uncurled 'issen an' swoom ti t' far bank. Nobbut wet, 'e wer, an' 'e'd git ower that, ah reckon.' Poor little girl, though! If Caliban found hedgehogs uncomfortable beneath his bare feet, she must have found this one quite as unpleasant.

As has been remarked, hedgehogs are mostly nocturnal in their movements, and bury themselves during the day in a pile of dead leaves or some such rubbish, often choosing a hedge bottom or dry ditch. In this connection, the writer of *Husbandman's Practice* said: 'The hedgehog commonly hath two holes or vents in his den, the one toward the South and the other toward the North, and look which of them he stops; thence will come great storms and winds follow.'

When in their day-time hiding places, they are reputed to snore, sometimes so loudly as to lead to discovery. They are also said to grunt; and, according to Shakespeare, to whine; but, so far as my own experience goes, they are singularly silent animals—excepting sometimes when, having entered a rabbit-burrow, as they often do, a rabbit-trap is blundered into. It is then a matter of great difficulty to release the unfortunate captive, as it curls itself firmly round the trap. The fact that they are hardly ever evicted when ferreting simply means that ferrets do not care to have any dealings with so awkward a customer: indeed, with the exception of man, the fox is their only dangerous enemy. Dogs, as a rule, while keen on finding them, treat them with respect, though I once had a bull-terrier bitch which would catch and worry the South African species (*Erinaceus fontalis* L.) despite bleeding lips and jaws.

Hedgehogs, as already said, retire into some hole or hollow at the approach of winter, laying up no store of food beyond their own accumulated fat. My wife once experienced quite a shock when, tidying up the garden in early spring, she seized one of these sleeping beauties in a double handful of withered Arabis under which it had retired. Our friend was, of course, equally surprised, especially as the temperature was still far from balmy, but eventually waddled off and found another shelter beneath a patch of iris.

As is well known, gypsies have always regarded hedgehogs as fair game and palatable food, though one gathers that the flavour, to a more cultured palate, is anything but pleasant. It comes rather as a comic relief in these anxious days, to read, as announced in the German press, that a gypsy was fined R.M. 10 for trying to eat one without the appropriate ration card !

After regarding *Erinaceus europæus* from the culinary aspect, it is but natural to turn to the question of his own diet ; and, from this point of view, I find he is not exactly a universal favourite. Let us review some of the points of indictment, endeavouring to 'nothing extenuate, nor set down aught in malice.'

He has always had his enemies, and is mentioned in various ancient enactments framed with a view to diminish 'vermyn,' while old churchwardens' accounts cover many payments for the heads of 'urchins.' We may start, however, by dismissing the accusation of an old writer who states : 'He clymeth upon a vine or an apple-tree and biteth off their branches and twigges, and when they (the apple) be fallen downe, he walloweth on them and so they stick on his prickes, and he beareth them into a hollow tree or some other hole' ! The time-honoured charge of sucking cows as they lie in pasture is now also generally regarded as unfounded—if it be not, indeed, a physical impossibility—but there are; I fear, sundry misdeeds from which he cannot be entirely exonerated. It has been said that a very large hedgehog is quite capable of killing a rabbit—if he can catch it—and undoubtedly eggs, chickens, and even an old hen, are not always safe. A hedgehog can depress his spines and squeeze through places one would suppose far too narrow for him. He has been known, for instance, to creep thus into a hen-coop ; and then, replete with his ill-gotten repast, to find it impossible to get out again—such raid being probably his last.

Despite all this, I think I may say of him, in the words of a poet who bore at least a Yorkshire name :

I have a liking old
For thee, though manifold
Stories, I know, are told
Not to thy credit.

After all, he is largely insectivorous—taking that term in its broadest and popular sense—and quantities of worms, slugs, and snails, with, doubtless, certain 'mice, and rats, and such small deer' are consumed. Of his other food, the bulk may probably be regarded as neutral, so far as it affects man ; and his unostentatious existence passes, for the most part, quiet, harmless and unseen.

A FIELD STUDY OF
ORTHODONTIUM GRACILE (WILSON) SCHWAEGRICHEN
 AND ITS VARIETY *HETEROCARPUM* WATSON

W. H. BURRELL, F.L.S.

ABOUT twenty years ago a new, unknown moss was found on the Pennine moors. Reports from many botanists, published as field notes in *The Naturalist* and by the British Bryological Society, have given a fairly good account of its present distribution, but there is, as yet, no generally accepted theory of its origin.

It happens that Dr. Walter Watson, of Taunton, who first described it, is this year's President of the Yorkshire Naturalists' Union. The opportunity is taken to dedicate this study to him.

Thanks are due to the keepers of the public and private herbaria, who have allowed their collections to be examined.

The history of *Orthodontium gracile* (the type) dates from 1833, when William Wilson, of Warrington, found it in Cheshire; Spruce reported it from Yorkshire in 1841, and Borrer from Sussex in 1843. It remained a rarity, known only in England until 1855, when it was collected in Abyssinia by William Schimper (not to be confused with his contemporary, W. P. Schimper, of Strasbourg). Later records were: Stirling, 1862; Finistère, 1880; Denbigh and Devon, 1882; Ayrshire, 1887; Shropshire, 1892; Stafford, 1894; California, U.S.A., 1896; Edinburgh, 1898; Flint, 1906; Northumberland, 1924.

Almost from the beginning some confusion has persisted, due to conflicting statements. The processes of the inner peristome were described by Wilson 'as long as the outer peristome'¹; that was altered later to 'outer teeth nearly twice as long as the narrow processes of the inner peristome.'² There are several drawings in Wilson's collection at the Natural History Museum, London, dated 1833, showing long processes; two, dated 1838 and 1846, show short processes.

Boulay's attention was drawn to the matter, when examining material from the newly-found station in France, in which the processes were long. As a check he examined an authentic specimen, gathered by Curnow in Cheshire, and finding them there also long, he suggested a correction, 'processus peristomii interni dentibus externis aequilongi.'³ Husnot, the editor of the *Revue*, remembered and compromised, when later, he published *Muscologia gallica*, 'peristome interne . . . de même longueur que les dents ou plus courtes.'

¹ *Suppl Engl. Bot.* (1839), t. 2835.

² *Bryologia Britannica* (1855), 219.

³ *Revue Bryologique* 1880, 84.

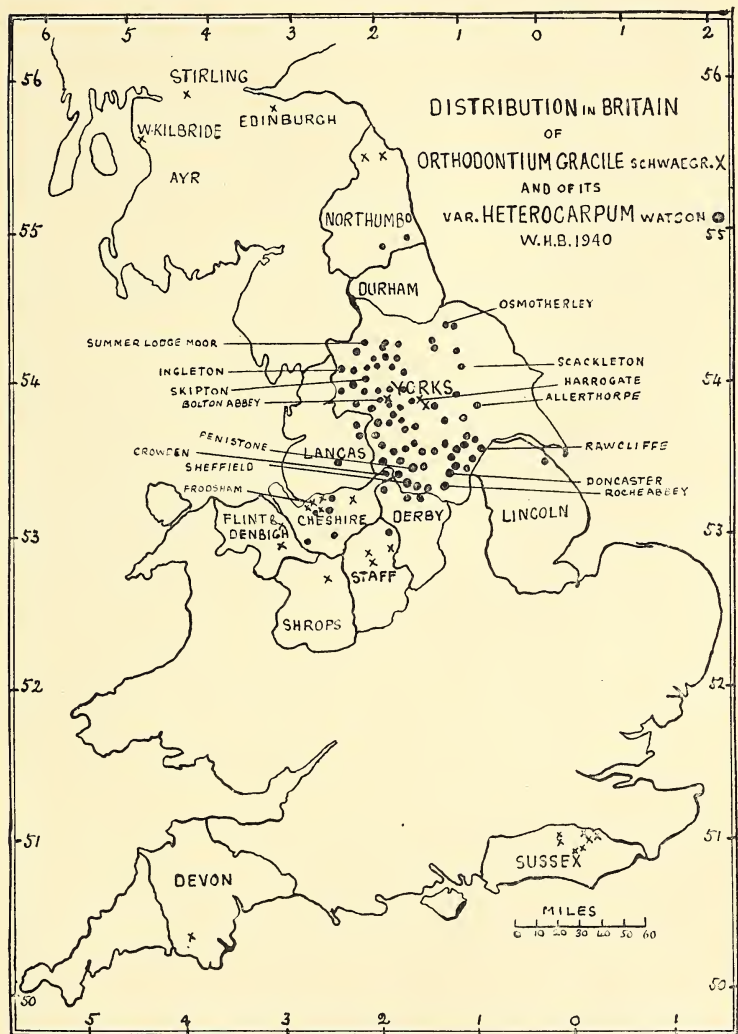
Hobkirk directed British attention to Boulay's note, and West found the peristome variable in Sussex gatherings, but in general the processes were short. J. Cash cited from Wilson's journal, that he devoted 'nearly a whole day (March 29th) to making a drawing of it. It is therefore certain that so far as this drawing is concerned, no inaccuracy can have crept in from any want of care or pains bestowed upon the subject.' Cash happened to have several packets gathered by Wilson at the time named; he found these processes in most instances fragmentary . . . but the perfect cilia are unquestionably equal in length to the outer teeth of the peristome.'¹

Boulay's note has not received the attention it merited, Wilson's revision in the *Bryologia* has been generally followed; Lindberg, in 1878, created a new genus '*Stableria*' for '*gracile*' and other species with short processes, reserving '*Orthodontium*' for those as long or longer than the outer teeth; in which he was followed by Braithwaite (1890), Brothrus (1909), Monkmeyer (1927), and other authors.

There is a simple solution to the problem; the green moss (gametophyte) is hardy, fertilisation is good, but the young fruits (sporophytes), emerging from the perichaetal leaves in early autumn, frequently become discoloured and shrivelled, an injury that may be repeated throughout the winter and spring, dependent upon weather and shelter. The whole succession may be destroyed, or growth may be irregular throughout the summer; with conditions favourable for uninterrupted growth, or when matured under glass, the very fragile processes are more or less equal in length to the outer teeth of the peristome. Such, for example, have been seen in a gathering by Stirling and Nicholson, Eridge, Sussex, April 2nd, 1904; Burrell, No. 464, Plompton, Mid West Yorks., August 2nd, 1924; No. 469, Bolton Abbey, Mid West Yorks, August 23rd, 1924; No. 487, Bolton Abbey, collected November 22nd, matured under glass until December 31st, 1933; No. 678, Bolton Abbey, spores collected January 20th, 1934, cultivated until October 10th, 1938. A single example will suffice to show what has repeatedly been watched; the winter of 1938-39 was mild, with no frost sufficiently prolonged to permit skating in Leeds. In March there was promise of a good show of capsules; continuous north-east winds in April and May damaged a large proportion, which were misshapen, shrivelled or bleached white. It is known that good fruit matured in 1833. The drawings dated 1838 and 1846, together with the altered diagnosis, suggest that perfect peristomes were not again seen for several years. Wilson was in communication with Carl Müller and W. P. Schimper, the three

¹ *The Naturalist*, 1880, pp. 43, 52 and 68.

men being amongst the foremost bryologists of their day. He took Schimper to see *Orthodontium* in Cheshire in 1847;



both German scientists adopted the short processes, 'peristomii dentes . . . interni demidio breviores'¹; 'interni processus multo breviores.'² There is little doubt that the matter was

¹ Müller, *Synopsis Muscorum*, I, 238.

² Schimper, *Synopsis Muscorum*, 389.

discussed, and agreed, by the three botanists, but happily Wilson did not wholly abandon his earliest sketches.

About 1920 H. C. Broome and W. Watson had under observation, at Crowden in Cheshire, and the adjacent moors, 'a form, perhaps a distinct species, and certainly a good variety, differing from the type in the shorter, broader, often more or less gibbous capsule, which may be smooth or deeply sulcate, straight or curved, sometimes very strongly so. Teeth of the inner peristome minutely punctate. Antheridia usually in separate gemmiform groups.'¹ Watson named it variety *heterocarpum*, with some hesitation, rather than claim a higher status for it.

Without previous knowledge of that work, an independent discovery of the same moss was made at Raikes Dyke, Holme, about eight miles distant, in May, 1922.²

It is now known to be one of the commonest mosses on the Pennine moors, from Sheffield to Skipton. In less profusion it is a woodland moss throughout south-west Yorkshire (V.C. 63), where Wilson's type has not been found. The latter is known in only three stations in the county, Bolton Abbey, 1841, Harrogate, 1896, and Plompton, 1914, all in the mid west division (V.C. 64), where it has been under continuous observation, showing little tendency to extend its range. The variety has not been found in Sussex, where the type has been known for nearly a century.

The essential differences are :

	Type.	Variety.
<i>Inflorescence</i>	paricous.	autoicous (heteroicous?).
<i>Capsule</i>	sub-erect, narrowly clavate, thin walled.	shorter, broader, often gibbous ; usually striate ; cells below the mouth with walls much thick- ened.
<i>Processes</i>	smooth, fragile.	papillose, robust.

What was the origin of var. *heterocarpum*? ; its relationship to Wilson's 'gracile'? ; the stability of its characters? Both were first recognised in Cheshire. Travis has reported the introduction of mosses to the Mersey with timber ; *Orthodontium* grows on living and dead wood as well as on peat and rock, but there is no known evidence in support of alien immigration.

The suggestion that var. *heterocarpum* is a native that has always been on the moors, cannot be directly disputed, but there is much circumstantial evidence against it, that seems worth mention.

¹ *Moss Exchange Club Report*, II (1921), 276, and *Journal of Botany*, 1922, 139-141.

² *Moss Exchange Club Report*, II (1922), 298.

There are many gatherings in public and private herbaria. Superficial examination, supported when possible, by dissections, shows that all of earlier date than 1900 belong to Wilson's type, *i.e.* inflorescence paricous, capsule, when present, narrowly clavate and thin walled, without striations. The earliest known gatherings of the variety were by E. A. Richards, Overton Hills, Cheshire, 1910, voucher in the Ingham collection, University of Leeds; same collector and station, 1911, in the Natural History Museum, Cromwell Road, London. There is a possibility that Braithwaite had a specimen about 1890, though it is not preserved in his collection: 'antheridia in axils of comal leaves, or gemmiform.'¹

The variety was seen in very small quantity at Bolton Abbey in 1924; it is now fairly abundant on siliceous rock, wood, and peat. A particular crag near the Strid which for many years had been watched for the few good capsules it might yield, had in 1938 cushions of the variety covered with fruits, closely associated and even intermingled with poorly fruited type.

Cocks found the type in Nidderdale in 1897 'very shy in fruiting.'² Several gatherings from Birk Crag, Harrogate, dated 1912, 1913, 1914, are type. A tuft, recognised as the variety by its more robust fruits, was seen in 1924; it is now there in profusion.

The type was seen at Plompton rocks in 1914.³ The variety was not found there until 1924. It is now the much more abundant, or perhaps the more conspicuous, on account of its numerous capsules.

In 1915-16 a study was made of the moss flora within the City of Leeds,⁴ in which the moorlands, woodlands, parks, cemeteries, quarries and waste lands were searched, primarily to see the influence of smoke-laden atmosphere on mosses. *Orthodontium* was not found, nor has typical 'gracile' been seen up to date. The variety was found in 1927 on oak trees on Alwoodley Moor. It is now known at Bramhope, Carlton, Cookridge, Horsforth, Kirkstall, and may be looked for in any suitable locality in the neighbourhood.

Calverley Wood quarries were systematically studied by Margerison.⁵ *Orthodontium* was not in the list of mosses in Vol. II, 242. A small tuft of the variety was seen in 1934; it is now fairly abundant on trees and on peat under *Aira flexuosa*.

¹ *British Moss Flora*, II (1890), 141.

² *The Naturalist*, 1897, 190.

³ *The Naturalist*, 1914, 134.

⁴ *The Naturalist*, 1917, 119-124.

⁵ *Bradford Scientific Journal*, 1907-09.

Strensall, Allerthorpe and Skipwith Commons, extensive primitive heathlands six to ten miles from the city of York, were favourite hunting grounds for the late William Ingham of York (1854-1923); he could not have missed the variety had it been there in his active period, especially at Skipwith,¹ where it was seen in 1933.

Typical 'gracile' has not been seen in the North Riding (V.C. 62, 65). The variety is not yet generally distributed there. A statement of what is known about it in North Yorkshire is made for future comparison. J. R. Simpson made a circuit of the North Eastern moorlands, and found traces at Thimbleby and Urra Moorside.² There are records for Bellerby Moor, Colsterdale, Sourmire, Stallingbusk and East Witton, all in Wensleydale. A traverse of the Riding in 1938 showed isolated stations on Summerlodge Moor near Gunnerside in Swaledale (V.C. 65), where it was seen on some peat-capped grouse butts at about 1,500 ft. alt.; also at Osmotherley, Swainby and Old Byland (V.C. 62). It has not been seen on the Tan Hill and Arkengarthdale Moors, nor in Teesdale, nor on the Whitby and Pickering Moors.

The association of two forms of *Orthodontium*, more or less comparable with British material, in widely distant regions, suggests some common relationship.

The Simen Alps in Abyssinia form an immense precipitous massif, with deep humid gorges and ice-covered peaks. William Schimper's moss from that region was briefly described by Carl Müller, 'foliis laxius areolatis, caeterum Europaeae simillima'³ (*i.e.* the inflorescence was paroicous—W.H.B.). A later diagnosis stated 'flos masculus in ramulo proprio infra florem femineum ennat.'⁴ Brotherus commented 'nicht autöcisch, wie vom Autor angegeben wird, sondern paröcisch.'⁵

In California, U.S.A., M. A. Howe found *Orthodontium gracile* with paroicous inflorescence, on charred stumps and logs of redwood, which in his judgment could not be distinguished, even varietally, from European plants. Intermingled with it was a plant which he named var. *californica*, 'which appeared always to be autoicous.'⁶ Le Roy Andrews confirmed Howe's opinion, but was inclined to regard them as even more distinct from each other; var. *californica* appeared to be represented solely by a single gathering.⁷

¹ *The Naturalist*, 1898, 349-352, and 1899, 61-63.

² *The Naturalist*, 1932, 366.

³ *Synopsis Muscorum* I (1849), 238.

⁴ *Botanische Zeitung* 1855, 753.

⁵ Engler and Prantl, *Pflanz.* I. I., 543.

⁶ *Erythea* v. (1897), 92.

⁷ *The Bryologist*, XXXV (1932), 49-51.

Two species from the Antipodes, *O. australe* and *O. sulcatum*, described by the authors as having smooth and furrowed capsules respectively, were discussed by H. N. Dixon. The capsules of *O. australe* showed all gradations, from a smooth to a very regularly ribbed and sulcate surface, the conclusion being 'I strongly suspect that *O. sulcatum* will have to be reduced to *O. australe* H. f. and W. . . . I do not think the problem can be solved satisfactorily except by study of good material in the field.'¹

Orthodontium gracile has been known in N.W. France since 1880. A plant was found in the forest of Fontainebleau in 1931, abundant, very fertile, autoicous and with sulcate capsules. Allorge and Thériot compared it with *O. infractum* Doz. et Molk., but considered it a distinct species, and named it *O. Gaumei*. By 1936 it had been traced in three cantons of the forest.²

The sporophyte of var. *heterocarpum* is more robust; the thicker seta and foot, the secondary thickening of cell walls with contraction of the mouth of the capsule, the more solid endostome, and enclosure of antheridia within erect bracts, are attended by greater, if not complete hardness, and lavish fruitage. An estimate of the number of capsules on a mat twelve inches square (30×30 cm.), gathered in Calverley Wood quarries near Bradford, gave twenty thousand as a round number; four hundred and fifty-three were counted on three square inches. A mat equally covered with fruit, at Birk Crag, Harrogate, measured nine square feet (2.7×0.3 m.). Similar masses of fruit have repeatedly been seen on the Pennine moors.

The following measurements are from gatherings from various stations during several years:

	Type.	Variety.
Length of largest leaf measured	5 mm.	8 mm.
Quadrangular cells at leaf base, average	0.068×0.017 mm.	0.116×0.015 mm.
Cells of Paraphyses (the two apical cells only were measured), average	0.056×0.014 mm.	0.113×0.015 mm.
Vaginula, average diameter at middle	0.16 mm. cylindrical	0.28 mm. tub shaped

It has been stated that increase in chromosome number can be caused by temperature shocks, with attendant monstrous growth and structural changes. The origin of the

¹ 'Studies in the Bryology of New Zealand.' *N.Z. Institute Bulletin* No. 3 (1926), 198.

² *Revue Bryologique* IV n.s. (1931), 113; 194-196; and IX (1936), 125.

triploid giant Aspen of Sweden has been attributed to a forest fire.¹

Bleak winter climate in the Pennine Hills,
Extremes of temperature in the Simen Alps,
Forest fire in California,

have come into the history of *Orthodontium*, and may have caused short-lived or more persistent variations.

Watson's variety 'heterocarpum' appears to be a true breeding, very fertile, fixed mutation, that has established itself in Cheshire and the adjacent counties, during the past fifty years, and is still spreading.

DISTRIBUTION IN GREAT BRITAIN.

V.C.		type	var.	V.C.		type	var.		
3	South Devon	.	+	—	61	S. E. Yorkshire	.	—	+
14	East Sussex	.	+	—	62	N.E. Yorkshire	.	—	+
39	Stafford	.	+	+	63	S.W. Yorkshire	.	—	+
40	Shropshire	.	+	—	64	Mid W. Yorkshire	.	+	+
50	Denbigh	.	+	—	65	N.W. Yorkshire	.	—	+
51	Flint	.	+	—	67	Northumberland, S.	.	—	+
54	North Lincoln	.	—	+	68	Northumberland, N.	.	+	—
57	Derby	.	—	+	75	Ayr	.	+	—
58	Cheshire	.	+	+	83	Edinburgh	.	+	—
59	Sth. Lancashire	.	—	+	86	Stirling	.	+	—

FIELD NOTE

Tees-mouth Notes.—Several visits were made to some of the Tees-mouth marshes on the Durham side of the river during April, 1939. On the 18th two pairs of Shovellers were observed on a marshy creek, and a nest found among sedges on the 20th had one egg. On the 24th the number had increased to five, but no down had been added. A pair of Garganeys were seen on the 19th and were feeding on the same creek on the 24th. The white eyebrow streak of the drake and the small size were distinctive. About a dozen Sheldrakes were seen standing in the rough grass. Two pairs of Teal and several Mallard completed the ducks seen. A Greenshank haunted a patch of mud on one dyke for several days being seen on the 18th, 21st, and 24th. As it was usually in the company of a Redshank an interesting comparison could be made. Redshanks were plentiful nesting in the tussocks of coarse grass. Several Snipe and Curlew were seen and two small flocks of Dunlins. Among the small birds Skylarks were extremely abundant as always on these marshes and Meadow Pipits and Reed Guntings common. No summer migrants were seen.—G. H. AINSWORTH and J. LORD, M.Sc.

¹ *Proceedings of the Linnean Society of London*, January, 1940, III.

Annual Meeting of the Geological Section, 1940.

THIS meeting, held Saturday, October 26th, proved more than usually encouraging both in regard to attendance and to exchange of ideas, and led one to believe that there is no dearth of geological interest in the Union, in spite of an apparent period of quiescence. Several matters of importance in regard to geology in the Union were discussed, and certain changes decided upon.

It was felt that of all the committees of the Geological Section the Temporary Sections and Borings Committee should be more useful than, as yet, it has proved to be. At the present time, in our county, a great many excavations and borings are being undertaken, each of which, in all probability, is bringing to light geological information which might be of the greatest use. It is obviously impossible for the few geologists directly interested in this work to know of all these excavations and to keep in touch with their progress. The members of the Geological Section feel that this is a matter not only for geologists but for all members of the Union, whatever their personal interest. It was therefore decided to place a note each month in *The Naturalist* to serve as a reminder to all those willing to help in the compilation of such records and giving the address to which they should be sent. Every member of the Union should help with the collection of these records, and no excavation or bore, however small, which discloses the nature of underlying rock structure should be left unrecorded. Full particulars as to the kind of information required in any particular exposure will be supplied on request.

The committees of the Geological Section differ from those of other sections in that they have sprung into being as a result of definite investigations or specialised interests. Such investigations are not everlasting, and it was felt at this meeting that the Jurassic Flora Committee had fulfilled its useful purpose, and that its continuation was no longer necessary. It was therefore suggested that either the committee should be dispensed with entirely or else replaced by one more in sympathy with present-day interests, as, for example, a Carboniferous Flora Committee. After some discussion it was decided to cancel the committee altogether, and to replace it by a referee for such Jurassic flora as might be collected in the future. This raised the question of referees generally, and it was felt that a panel of referees should be formed, in all branches of geology, to whom specimens might be sent for identification. It was decided to commence the panel by inviting the following specialists to act as referees: Dr. Crookall (Carboniferous Flora), Dr. Hamshaw Thomas (Jurassic Flora), Dr. Moy-Thomas (Carboniferous Fish), and Dr. Versey (Glacial Erratics). We hope that our members will make good use of these referees. We need not remind them that it will be necessary to cover the postal expenses involved. Addresses of referees will be found in the new membership card.

At the end of the meeting Mr. Mason and Mr. Shillito, of the Geological Photographs Committee, projected through the lantern a number of slides of exposures in the chalk, gravel pits, etc. These slides were of intense geological interest and great technical perfection. The Geological Section would like it to be known that albums of photographic records are kept and are available for reference. Additions to these records are at all times welcome.

The next annual meeting of the section will be held on October 4th, 1941, in the Geological Department of the University, Leeds, conditions permitting.—J. A. B.

CORRESPONDENCE

To the Editor of *The Naturalist*.

DEAR SIR,

Now that the Supplement to Lees' and the other Yorkshire Floras is complete it occurs to me that workers may wish, as I do, to put on record some points in which it is incomplete. I have nothing but gratitude

for the editors of the Supplement for the way in which they have completed their difficult task, but where significant omissions have been made I believe the Floras and Supplement will be all the more useful if these errors are pointed out now. I give in each case reasons for my proposed addition. The additions are given in the order of the Supplement.

Orobanche minor Sm. The Shipley site described in *The Naturalist*, September, 1937, p. 209, and mentioned in the Annual Report of that year, is not mentioned. It is, however, a significant extension of the plant's range in Yorkshire.

Ceratophyllum demersum L. The Supplement's record is 'mill pond at Baildon Green, F.R., per F. Haxby.' After seeing this record I asked Mr. Haxby for a specimen of this find. He could only produce a herbarium sheet of this plant labelled 'J. W. Tindle, Tong Park, Aug. 1909.' Tong Park is about one and a half miles away from Baildon Green, but borders on Baildon. The record book of the Bradford Naturalists has the record 'Mill dam at Baildon 1908, J. W. Tindle.' As there appears to be no mill pond at Baildon Green, I think it probable that there is only one locality in question here, that it is a mill pond at Tong Park which borders on Baildon and may be a part of Baildon parish, and that the word 'Green' is an incorrect addition. J. W. Tindle was apparently the first collector here, and it is probable that F. Rhodes, a fellow Bradford naturalist, collected from the same place.

Neottia-nidus-avis Rich. No Upper Wharfedale record. It is known at Grass Woods (Y.N.U. 1927) and at Bolton Abbey Woods.

Epipactis ovalis Bab. There is no Wharfedale record for this in the Flora or Supplement. I gathered it in Grass Woods in flower on August 3rd, 1931, and in bud on June 17th, 1939.

Orchis ustulata L. The specimen found in Bastow Wood at the Whitsun meeting of the Y.N.U., 1927, and recorded in *The Naturalist*, is not mentioned. This is a significant extension of the recorded range of this plant.

Polygonatum officinale All. The reference in Lees to this plant in Wharfedale is curious and misleading. It is as truly wild in Grass Woods and in various scar woods in the dale from Grassington at least to Buckden and perhaps beyond, as it can possibly be anywhere in its range.

Convallaria majalis L. The very abundant occurrence of this plant in Grass Woods and further up Wharfedale receives no mention either in the Flora or Supplement.

Schoenus nigricans L. Again no locality in Wharfedale. I found it at Kettlewell on July 7th, 1928, and G. A. Shaw found it at Kilnsey in 1939.

Carex divulsa Good. The re-finding of this plant at or near its old Bingley station recorded in Dr. Sledge's report for 1935 receives no mention in the Supplement.

Calamagrostis lanceolata Roth. The record at Shirley Pool, Askern (*The Naturalist*, 1938) is not mentioned. It is quite an addition to the localities for this rather scarce plant.

Some of the above records are instances of the impression one decidedly gets from Lees' Flora that Upper Wharfedale was not well known, possibly because it was much less accessible then. I think, nevertheless, that it should be 'put on the map' in this respect, before the Supplement is finally completed.

A. MALINS SMITH.

16-10-'40.

P.S.—As to clerical errors it seems not unlikely to cause confusion in future that the Upper Wharfedale Kilnsey should be spelt the same as the Spurn village Kilnsea in connection with two orchid records, *O. purpurella* and *O. majalis* var.

CLASSIFIED INDEX

COMPILED BY W. E. L. WATTAM

It is not an index in the strictest sense of that term, but it is a classified summary of the contents of the volume, arranged so as to be of assistance to active scientific investigators; the actual titles of the papers not always being regarded so much as the essential nature of their contents.

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CORRIGENDA

Page 215, Fifth line up, *delete*, *C. 7-punctata* ab. *maculosa* (Weise).

„ 231, Fourteenth line up, *for* '1867' *read* '1866.'

Yorkshire Naturalists' Union.

President:

W. WATSON, D.Sc., (Lond.), A.L.S., Taunton.

Hon. Secretary:

CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer:

S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary:

W. G. BRAMLEY, Bolton Percy, York.

The 423rd Meeting

WILL BE HELD AT

AUSTWICK

WHITSUNTIDE,
MAY, 11th to 13th, 1940.

HEADQUARTERS.—Cross Streets Hotel, Austwick, *via* Lancaster. Proprietor, C. E. Stead. Terms, 10/- per day. Will members please make application for rooms as soon as possible, and in case of difficulty write direct to Chris A. Cheetham, Austwick, *via* Lancaster. Members requiring private accommodation may also get information in this way.

TRAVEL FACILITIES.—The Bus Service (Ribble and Pennine) from Skipton to Ingleton passes the hotel. At present (February) the service is as follows, but this may be extended towards Whitsuntide.

		N	N	H	N		
Skipton ...	...	6-30	7-30	11-30	2-30	4-30	5-30
Hellifield ...	...	7-0	8-0	12-0	3-0	5-0	6-0
Settle ...	...	7-20	8-20	12-20	3-20	5-20	6-20
Austwick ...	...	7-34	8-34	12-34	3-34	5-34	6-34
Clapham ...	...	7-58	8-58	12-58	3-58	5-58	6-58
		N	N	H	N		
Clapham ...	...	8-7	9-7	1-7	3-7	4-7	7-7
Austwick ...	...	8-19	9-19	1-19	3-19	4-19	7-19
Settle ...	...	8-35	9-35	1-35	3-35	4-35	7-35
Hellifield ...	...	8-55	9-55	1-55	3-55	4-55	7-55
Skipton ...	...	9-26	10-26	2-26	4-26	5-26	8-26

N—Not on Sunday.

H—Tuesday, Saturday, Sunday only.

Clapham Station is the nearest station and is about 1 mile from the 'bus at Clapham village or 3 miles from Austwick. Settle Station (Giggleswick $\frac{1}{2}$ mile) is $4\frac{1}{2}$ miles from Austwick. Conveyances can be had at Settle, or G. Truelove (Austwick) will meet trains.

ROUTES.—Leaders will be ready to guide the geologist, botanical and ornithological groups, and the day's outings will be determined by weather conditions. A note will be left at Headquarters from which the party will start at 10 a.m.

GEOLOGY.—Mr. J. A. Butterfield, M.Sc., F.G.S., writes:—The Ingleborough district is too well known to geologists to need detailed description. Its variety of interests is sufficiently stated by pointing out that within seven miles of Austwick the following geological formations

can be studied: Permian, Coal Measure, Millstone Grit, Yoredale, Carboniferous Limestone, Silurian, Ordovician, and perhaps Pre-Cambrian. There is also interesting glacial phenomena, probably the clearest unconformity in the country, easily studied structural phenomena, and a wealth of material in the study of caves and underground drainage.

We suggest that attention is given to the pre-Carboniferous rocks, since they occur here in one of the only two Yorkshire locations, and they include the oldest rocks known to occur within the Pennine area. In the Austwick district these rocks occur as inliers on the north or upthrow side of the North Craven fault. Directly north of Austwick they can be examined in Crummackdale. They occur also in Chapel-le-dale and in Ribblesdale. They form a complicated series of steep-sided anticlines and synclines, somewhat interrupted by faulting, and planed down to form a floor for the overlying Carboniferous rocks. The oldest rocks, the Ingletonian Series, consist of slates with bands of grit and a coarse arkose or conglomerate locally known as the 'Ingleton Granite.' These rocks are well exposed in Chapel-le-dale and at Horton-in-Ribblesdale. Their exact geological age is doubtful, since no fossils have been found, but they are considered by many geologists to be Pre-Cambrian. These Ingletonian rocks are of great interest since they form the core of the Pennine Range. The Ordovician rocks are well seen in the neighbourhood of Wharfe and Norber and near the head of Crummackdale. They are represented by fossiliferous limestones and mudstones, yielding trilobites and brachiopods. They are overlain by calcareous shales with trilobites and graptolites. The Silurian rocks, which occupy the main portions of the inliers, are sub-divided into three sections. Dark shales with graptolites and calcareous mudstones containing many trilobite fragments form the lower section, of Valentian age. They are succeeded by Austwick Flags and Grits of Wenlock age, which also yield graptolites. Finally come rocks of Ludlow age represented by Horton Flags and the Studfold Sandstone. The flagstones contain graptolites and include the Moughton Whetstones, fine-grained siltstones with concentric dull red and green bandings. They are well seen at the head of Crummackdale. The Studfold sandstone resembles the Austwick Grits and Flags, and is seen east of Studfold village. Much difference of opinion has existed, and still exists, as to the relationship of the various rocks in these exposures, and as to their ages. For more details members are referred to 'Ingleborough,' Hughes, *P.Y.G.S.*, Vol. XIV, Pt. 3, 1902; 'The Pennines and Adjacent Areas,' Wray, H.M. Stat. Office, 1936; and 'Geology of the Yorkshire Dales,' Hudson, etc., *Proc. Geol. Soc.*, 1933. The latter gives many references to geological literature concerning this question.

Members visiting the area for the first time will want to see (a) the Norber perched blocks—glacial erratics, of Silurian Grit, and weighing many tons, transported from their parent bed in the Crummack valley and left on the limestone plateau, where they now stand on pedestals of limestone, (b) Gaping Gill, Trow Gill, and Clapham Cave—one of the finest and simplest studies of water action in a limestone area, and (c) the several splendid exposures of the vast unconformity between the Carboniferous Limestone and the underlying rocks as shown, for example, at Arcow Wood, Austwick Beck Head, Thornton Force, etc.

FAUNA AND FLORA.—From the geological note it will be seen that the district is an interesting one where the relation between the types of rocks and the plants found on them can be usefully examined. Two miles to the south of the fault lie the moorlands of the Bowland Knotts, which are Millstone Grit, and here the streams running down to form the Wenning cut through interesting shale beds, and in these ghylls the Beech and Oak ferns are found.

In the open valley between Austwick and the Knotts shallow post-glacial lakes have been filled up by vegetation, and are now known as 'Mosses.' These wet peaty areas have their own particular plants and animals.

The whole district may be said to consist of four types of country, the Slatey Rocks, the Limestone Rocks, the Sandy Rocks, and the Marshland.

The Rabbit is the most obvious animal and is a considerable source of income to many farmers. Hares, Watervoles and Hedgehogs are not uncommon, and the Red Squirrel is still plentiful, and here it is free from the invading Grey race. Foxes come down from the rocks of Ingleborough,

Badgers are caught occasionally, and the Otter comes up the Wenning and on to the ' Mosses,' while Weasels and Stoats thrive on the Rabbits.

The birds which are most noticed by visitors are the Yellow Wagtail, Wheatear, Dipper, Heron, Blackheaded Gulls, Plover, Curlew, Redshank, Ring Ousel and Golden Plover.

Some occasional visiting species are the Raven, Buzzard, Peregrine, Shorteared Owl, Hawfinch, Goldfinch and Stonechat.

Among nesting species are Teal, Mallard, Waterhen, Oystercatcher, Merlin, Dunlin, Marsh Bunting, Whinchat, Nightjar, Long-eared Owl, Goldcrest, Treecreeper, Longtailed and Marsh Tits, Wood and Garden Warblers. Mr. W. K. Mattinson, who has helped with these notes, says the Stonechat used to nest here frequently some years ago, and he states that the Redshank, now one of the commonest waders, was almost unknown fifty years ago, and that the Redstart is far less frequent now than it used to be. The Grasshopper Warbler used to nest regularly on the Moss, but it has been absent the last two or three years. The Yellowhammer is seldom seen north of the Millstone Grit area.

The three White Butterflies, the Common Blue, Small Copper, Heath and Small Tortoiseshell, are plentiful, and lately the Small Pearl bordered Fritillary has been seen regularly on Lawkland and Austwick Mosses, and the Peacock has been seen occasionally. The Meadow Brown is seldom seen away from the Millstone Grit country, where the Wall Brown was seen last year. The restriction of such common species as the Meadow Brown Butterfly and the Yellow Hammer to the Grit country is an interesting and difficult question.

The large day-flying moths, Fox, Oak Egger, and Emperor, may be seen on the Mosses and Moors, and the large Osier Hornet Clearwing occurs on the willows on Lawkland Moss. Two very pretty but small day-flying moths, *Pyrausta purpuralis* L. and *P. cingulata* L., may be seen in sunny corners on the limestone rocks, and here an interesting species of the two-winged flies, *Microdon mutabilis* L. occurs. As a larva it lives on the underside of flat stones in the nests of the large black ants. On these limestone scars two Craneflies, *Tipula variicornis* Schum. and *Dactylolabis sexmaculata* Mcq., are generally noticed and seem to find the conditions they require in the crevices of the rocks.

In the pools on the ' Moss ' the curious caterpillar-like larvæ of the Cranefly *Phalacrocer replicata* L. feed on a floating moss, *Hypnum fluitans*, one of the very few cases of mosses being used for food. One of the possible malaria carrier mosquitos, *Anopheles claviger* Mg. (*bifurcatis*) is fairly common with other keen biters like *Theobaldia annulata* Schrk., *T. morsitans* Theob., and the rare *T. alaskaensis* Ludlow, *Aedes punctor* Krbly. (*nemorosus*) and *Ae. annulipes* Mg. The beautiful winged Cranefly *Idioptera fasciata*, and the little known *Prionocera pubescens* Loew. live among the filling up pools. Other rare Diptera are found on a wet hillside on the Slatey rocks at the head of Norber Syke, where the rushlike *Schoenas nigricans* grows. One, *Tipula coerulea* Lack. is known nowhere else in Britain. It is a Scandinavian insect, as is its companion *Dicranomyia aperta* Wahl., but this latter has been found at Ingleton and in Morayshire.

The droughts of late years have depleted the number of Dragonflies, but *Aeschna juncea*, *Pyrrhosoma nymphula*, and *Sympetrum scoticum* may be caught on the Moss, and last year *S. striolatum* was caught on the moor above Crummackdale.

In the 1928 Circular Mr. H. Whitehead, B.Sc., stated that 14 species of Mayflies, 10 species of Stoneflies, and 22 species of Caddisflies have been taken in the Austwick streams. *Philopotamus montanus* is abundant in the higher portion of Austwick Beck, and near the village bridge swarms of *Ephemerella ignita* may be seen ovipositing. Norber Syke has an interesting species, *Heptagenia lateralis*, while the slow-running Fen Beck yields *Ephemera danica*, *Centropilum luteolum*, and other species typical of a stream bed with sand and detritus. In this Circular, Mr. William Falconer mentioned the occurrence of two interesting spiders, *Panamomops sulcifrons* Wid. and *Lophocarenum nemorale* Bl.

The Crayfish is not found in the streams here and this despite efforts to introduce it, and also although it is plentiful in the higher portions of the Ribble a few miles away.

Botanically, the limestone area will be the most attractive, here the

Blue Sesleria grass is widespread and with it Rock Roses, Carline Thistle, Wild Thyme, Small Scabious, and Salad Burnet are plentiful, while in favoured places are Lilies of the Valley, Solomon's Seal, Purple Saxifrage, Horse Shoe Vetch, Nodding Melic grass, and Columbine (two very different forms occur in the district), the Spiny Buckthorn is fairly plentiful and last year it was full of its black berries; Bird Cherry is abundant and occasionally the Spindle Tree may be seen; in Feizor Wood both the Purple and Yellow Daphnes occur, and this is one of the stations for the Spring Potentilla, the Alpine Potentilla grows on the higher scars. In the limestone crevices the Giggleswick Epipactis grows and the forms of the Lady's Mantle and Eyebright will interest specialists. The rarer ferns are on the higher parts of Moughton; they include the Rigid Buckler, Green Spleenwort, Holly and Limestone Polypoddy.

On Moughton the Juniper is plentiful and it has long been interesting our Ecological Section owing to the large areas of it in a dead or dying condition; one of the parasitic fungi growing on it, *Gymnosporangium*, may be possibly in good condition for examination.

Under the Juniper bushes, the heart-leaved Twayblade finds the shelter and soil it requires and in some seasons is plentiful.

A warning might be given to ecologists who are newcomers to the district that Moughton is covered in places with glacial drift and subsequent peat, which provide homes for Ling, Heaths, Crowberry, Cranberry and Bracken.

On the Moss three species of Cottongrass, *Eriophorum angustifolium*, *E. vaginatum*, and *E. paniculatum* make a fine show when in fruit. Floating Bur-reed, Small Bladderwort, Globe Flower, Saw-wort, Marsh Cinquefoil, Bog Myrtle, Spinulose Buckler Fern, and especially the forms of the Marsh and Spotted Orchid will prove of interest; the species of Sedges include *Carex lasiocarpa* (*filiformis*) and *C. diandra* (*teretiuscula*).

Bryologists will find the species of *Thuidium*, *amariscinum*, *delicatulum*, *recognitum*, and *Philiberti* interesting and also the species of *Trichostomum* which were described in *The Naturalist*, 1937, on p. 103, the small dark form of *Rhacomitrium protensum* mentioned on p. 153 of the 1939 *Naturalist* can be seen, and two species of *Andreaea*, *petrophila* and *Rothii* grow at the low altitude of 800 ft. O.D. Other interesting species to be found are *Hylocomium rugosum*, *H. brevirostre*, *Cylindrothecium concinnum*, *Amblystegium confervoides*, *Hypnum falcatum* var. *virescens*, *Seligeria recurvata*, *S. pusilla*, *Zydodon gracilis*, *Grimmia funalis* and *G. subsquarrosa*.

HEPATICS.—Mr. F. E. Milsom writes:—Among many species common to limestone country, the following are worth note: *Riccia Beyrichiana*, *R. sorocarpa*, *Reboulia hemisphaerica*, *Preissia quadrata*, *Marcantia polymorpha* form. *aquatica*, *Lophozia muelleri*, *L. alpestris*, *L. Floerkii* var. *naumanniana*, *L. barbata*, *Sphenobolus exsectiformis*, *Chiloscyphus polyanthus* var. *fragilis*, *Cepholozia macrostachya*, *C. Loitlesbergeri*, *C. pleniceps* var. *macrantha*, *Leptoscyphus anomalus*, *Blepharostoma trichophyllum*, *Lepidozia setacea*, *Ptilidium pulcherrimum*, *Scapania aspera*, *Cololejeunea calcarea*.

LICHENS.—Mr. W. E. L. Wattam writes: The district affords ample scope for the study of these plants. Among the species which should be met with are: *Peltigera canina* Willd., *Parmelia physodes* Ach., *P. perlata* Ach., *P. sulcata* Tayl., *P. conspersa* Ach., *P. fuliginosa* Nyl. and var. *laetevirens* Nyl., *Cetraria glauca* Ach., *C. aculeata* Fr., *Evernia prunastri* Ach., *E. furfuracea* Mann, *Ramalina fraxinea* Ach., *Xanthoria parietina* Th. Fr., *Placodium callopismum* MÉR., *P. flavescens* A. L. Sm., *P. citrinum* Hepp., *P. ferrugineum* var. *festivum* A. L. Sm., *P. rupestre* var. *calvum* A. L. Sm., *Candelariella vitellina* Müll-Arg., *Physcia ciliaris* DC., *Lecanora subfusca* Ach., *L. campestris* B. de Lesd., *L. atra* Ach., *L. galactina* Ach., *L. varia* Ach., *L. parella* Ach., *Pertusaria pertusa* D. T. & S., *Cladonia sylvatica* Hoffm., *C. uncialis* Webb, *Lecidia confluenta* Ach., *L. rivulosa* Ach., *Rhizocarpon geographicum* D.C., and *Verrucaria nigrescens* Pers.

MEETING AND TEA.—At Cross Street Hotel, Austwick, on Monday evening, 5-30 p.m., price 2/-. This will be followed by a meeting for the presentation of reports on the work done on the excursions and for the election of any new members. The Secretary will send proposal forms to any possible new members; under present conditions it is very necessary to use every effort to keep up our number on the roll.

The next meeting will be at Huddersfield for Dean Clough (V.C. 63) on June 1st, 1940.

Yorkshire Naturalists' Union.

President :

W. WATSON, D.Sc. (Lond.), A.L.S., Taunton.

Hon. Secretary :

CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer :

S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary :

Dr. J. GRAINGER, B.Sc., Tolson Museum, Huddersfield.

The 424th Meeting

WILL BE HELD AT

THUNDER BRIDGE near HUDDERSFIELD On Saturday, JUNE 1st, 1940.

for the investigation of the surrounding country, particularly
Storthes Hall Woods and Boothroyd Wood.

HEADQUARTERS.—The Clothiers' Arms, Stocksmoor. Proprietor :
Mrs. Roebuck.

TRAVEL FACILITIES.—The train services are as follows :

	a.m.	a.m.	a.m.	p.m.	p.m.
Leeds	9-18	9-35	10-25	12-50	1-15
Huddersfield ...	9-48	10-20	11-3	1-24	1-59
	a.m.	a.m.	p.m.	p.m.	
Bradford	8-35	10-43	12-40	1-50	
Huddersfield ...	9-19	11-25	1-23	2-18	
	a.m.	a.m.	p.m.		
Wakefield	8-53	11-54	2-19		
Huddersfield ...	10-43	12-44	3-11		

There are, in addition, hourly services of 'buses between Huddersfield and Wakefield, Huddersfield and Halifax, every 15 minutes between Huddersfield and Bradford, and every 20 minutes between Huddersfield and Leeds. The party will meet at Spring Grove (the junction of the Kirkburton and Penistone roads) at 11 o'clock, where leaders will be in attendance to guide the party. There is an excellent 'bus service available, practically every 10 minutes, all departing from Lord Street, Huddersfield. The 'bus numbers are 14, 15, 34, 55 (Barnsley Service), 68 (Shepley), 80 (Kirkburton), 30, 33 and 34 (Penistone), and the County 'bus service to Wakefield. If desired, train can be taken to Stocksmoor (L.M.S.). Those arriving later should walk along the Penistone Road, entering Storthes Hall Wood by the stile in the wall, a short distance above Broomstyles House. A leader will meet an afternoon party at 2 p.m. at the stile mentioned.

Permission to visit their estates has kindly been granted by the West Riding County Council through Dr. D. K. Bruce, by Percy G. Norton, Esq., and Mrs. T. H. Moore.

MAPS.—Sheets Nos. 260 and 261 of the 6-inch Ordnance Survey may be consulted.

Mr. W. L. Wattam has supplied the following notes :

BOTANY.—The woodlands, extensive in character, furnish a typical example of the vegetation of a Coal Measure Sandstone zone, often covered by much humus and generally moist ; the vegetation being less exposed and mesophytic in character. The dominant plants are *Holcus mollis*, *Pteris aquilina*, and *Scilla festalis*. Numerous other interesting plants occur, such as *Petasites alba*, *Aquilegia vulgaris* (rare), *Cenanthe crocata* and *Asplenium trichomanes*. In parts of the woods, Ling, Bilberry, and *Erica tetralix* are conspicuous plants, where they occur indicating the old portions of Farnley Moor. Extensive felling of the older trees, Beech, Oak and Birch has been in operation for the last 20 years, but replanting of coniferous trees, species of Larch, Clustered Corsican, and Douglas Pines has proved very successful.

BRYOPHYTES.—The district consists in the main of steep hillsides, often wooded, with small streams in the valleys. The Bryophytic flora is typical of that of the Coal Measures and Millstone Grit. The hillsides are generally dry and carry such mosses as *Campylopus pyriformis*, *Dicranella heteromalla*, *Tetraphis pellucida*, *Aulaacomnium androgynum*, *Hypnum cupressiforme* var. *ericitorum*. They are too dry to carry much in the way of hepatics, but *Lophocolea heterophylla* is found. On the lower ground, nearer the streams, hepatics are more plentiful and *Lophozia ventricosa*, *L. attenuata*, *Cephalozia bicuspidata*, *Cephaloziella Starkii*, *Calypogeia Trichomanis*, *C. arguta*, *Lepidozia reptans* are seen. *Orthodontium gracile* var. *heterocarpum* is locally frequent. On rocks and boulders in the streams *Fissidens pusillus*, *Fontinalis antipyretica*, *Heterocladium heteropterum*, *Eurynchium rusciforme*, *Scapania undulata* are typical. Among rarer species found in the district may be mentioned *Brachythecium populeum*, *Amblystegium irriguum*, *A. Juratzkanum*, *Eucalyx obovatus*.

MAMMALS.—The following species have been noted: Common Field-vole, Pipistrelle, Fox, Stoat, Weasel, Red Squirrel, Hedgehog, Mole, Hare, and Rabbit.

BIRDS.—The migrants Swallow, House Martin, Redstart, Wheat-ear, Chiffchaff, and Nightjar should be seen. Other species occurring are Tawny Owl, Sparrow Hawk, Kestrel, Magpie, Jay, Kingfisher, and Lesser Spotted Woodpecker. There is a large rookery at Broomstyles.

LEPIDOPTERA.—The area of investigation was the favourite collecting ground of the late Mr. Peter Inchbald, the late Mr. S. L. Mosley, and the late Mr. T. Porritt, as evidenced by the *Catalogue of Lepidoptera* found in the Huddersfield District (*Trans. Huddersfield Nat. Society*, 1883). The writer can confirm the records of the following species which may be seen at the date of the excursion, viz., *S. bembiciformis*, *Hepialus hectus*, *H. vellecta*, *C. caja*, *D. vinula*, *N. dictæa*, *A. rumicis* and var. *salicis*, *X. rurea* and var. *combusta*, *X. lithoxylea*, *H. adusta*, *M. margaritata*, *O. bidentata*, *B. repandata*, *A. betularia*, *B. rhomboidaria*, *A. remutata*, and *M. hastata*.

Mr. M. D. Barnes writes:—The area to be visited on the excursion should prove an interesting one for the lepidopterist as the vegetation is of a very varied nature. Among the Birch and coniferous trees of the upper part of Storthes Hall Wood the following insects have been taken and therefore may still be expected to occur: *Metrocampa margaritaria*, *Crocallis elinguaris*, *Pachys betularia* (ab. *double-dayaria*), *Bupalus piniaria*, *Eupithecia goossensiata*, *Amæbe olivata*, *Saturnia pavonia*, *Anarta myrtili*.

COLEOPTERA.—The beetle fauna of this area would appear to have been rather badly neglected and little is known of the species occurring here in June.

The area most likely to repay working by coleopterists is the young Pine and Birch plantation of the upper part of Storthes Hall Wood. Another part which should well repay a short time spent in sweeping, is the part of the Storthes Hall Wood adjoining Fenay Beck, where the vegetation is very varied and rank.

HYMENOPTERA.—The sandy soil of the Storthes Hall Wood forms an excellent nesting material for many species of *Andrena* which are very common by the sides of paths among the heather in many parts of the wood. A number of the 'Cuckoo Bee' have also been observed quite commonly flying round the holes made by *Andrena*.

MEETING AND TEA.—At the Clothiers' Arms. Tea at 5-30 p.m. Plain tea, 1/3; Fruit tea, 1/6, or with fresh cream, 1/9; Meat tea, 2/-. Meeting for presentation of reports, etc., at 6 p.m.

The next meeting of the Union will be in V.C. 61, near to Selby, on June 15th.

Yorkshire Naturalists' Union.

YORKSHIRE NATURALISTS' UNION.

For particulars apply to

*The Hon. Secretary, Chris. A. Cheetham, Austwick via Lancaster ;
or to The Hon. Treasurer, S. D. Persy Fisher, Sackville Street, Leeds.*

This form, when filled up and signed, should be sent to the Hon. Secretary of the Union, accompanied by the amount of the first year's subscription.

The Subscription of 15/- entitles the members to receive the Union's monthly magazine, "The Naturalist," as well as the "Transactions."

Persons related to and resident in the family of a member are admitted as 5/- members, to enable them to attend excursions, but not to receive the publications.

Qualification for Life Membership :—A Donation of 11 Guineas.

.....I9.....

.....[Signature and Titles.]

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wishes to become a member of the Yorkshire Naturalists' Union, and will subscribe
FIFTEEN SHILLINGS (15/-) per annum until the end of the year in which written
resignation is given.

(viii)

.....[Signature of

Proposer
and

Seconder.]

.....

Elected.....I9 at.....

.....Chairman's Signature.

Yorkshire Naturalists' Union.

President :

W. WATSON, D.Sc.(Lond.), A.L.S., Taunton.

Local Secretary :

C. W. MASON, 15 Park Avenue, Hull.

Hon. Secretary :

CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer :

S. D. PERSY FISHER, Sackville Street, Leeds.

The 425th Meeting

WILL BE HELD AT

SKIPWITH

for the investigation of

Skipwith Common *cum* Riccall Common

On Saturday, JUNE 15th, 1940.

TRAVEL FACILITIES.—Skipwith is best reached by bus from York. The Pullman Bus Service, *via* Thorganby, is as follows :

	a.m.	a.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.
York	10-12	11-12	12-12	1-12	2-12	3-12	4-12	5-12	6-12
Fulford	10-22	11-22	12-22	1-22	2-22	3-22	4-22	5-22	6-22
Eserick	10-32	11-32	12-32	1-32	2-32	3-32	4-32	5-32	6-32
Riccall	10-42	11-42	12-42	1-42	2-42	3-42	4-42	5-42	6-42
Barlby	10-50	11-50	12-50	1-50	2-50	3-50	4-50	5-50	6-50
Selby	10-55	11-55	12-55	1-55	2-55	3-55	4-55	5-55	6-55
	a.m.	a.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.
Selby	10-25	11-25	12-25	1-25	2-25	3-25	4-25	5-25	6-25
Barlby	10-30	11-30	12-30	1-30	2-30	3-30	4-30	5-30	6-30
Riccall	10-38	11-38	12-38	1-38	2-38	3-38	4-38	5-38	6-38
Eserick	10-48	11-48	12-48	1-48	2-48	3-48	4-48	5-48	6-48
Fulford	10-58	11-58	12-58	1-58	2-58	3-58	4-58	5-58	6-58
York	11- 8	12- 8	1- 8	2- 8	3- 8	4- 8	5- 8	6- 8	7- 8
	a.m.	p.m.	p.m.			p.m.	p.m.	p.m.	
York	8-50	12-15	3- 0	Skipwith.		2-30	5-30	8-30	
Eserick	—	—	3-20	Thorganby		—	—	—	
Thorganby	9-25	12-50	—	Eserick		2-38	5-38	8-38	
Skipwith	9-30	12-55	3-28	York		2-58	5-58	8-58	

ROUTES.—Members will find that Riccall will be the most convenient starting place, and the party will leave after the arrival of the bus from York at 10-42 a.m. Messrs. C. F. Procter, A. K. Wilson, and T. Stainforth, B.A., B.Sc., will act as guides. Those who go to Skipwith will meet the party on Skipwith Common, and members with cars should meet at Headquarters at 11-0 a.m.

HEADQUARTERS.—Hare and Hounds, Skipwith. Proprietor : J. P. Curtis. 'Phone : Skipwith 49.

BOOKS AND MAPS.—The area to be investigated is included in the 1-in. Ordnance Survey Maps (coloured edition), Nos. 27 and 32, and the same Nos. of the Popular Edition are required to cover the district. For most purposes No. 32, Popular Edition, is adequate. Kendall and Wroot's *Geology of Yorkshire* and J. F. Robinson's *Flora of the East Riding* should be consulted. Circulars Nos. 124 and 236 contain much useful information.

PERMISSION to visit the estate has been kindly given by Mr. C. W. Thompson, of the Estate Office, Escrick, York.

The following notes are reprinted from Circular No. 375 :

THE DISTRICT.—Mr. S. H. Smith writes : The village is situated some ten miles south-east of York, and three miles from Riccall Station on the L. & N.E.R. main line. The old stone built Church of St. Helen embodies many styles of architecture, early Norman and Perpendicular, and has a Saxon tower. There is some ancient glass and other remains of antiquarian interest. Skipwith Hall is a fine brick-built mansion of Queen Anne period.

The common is an extensive tract of sandy land with a veneer of peat ; much of it in an almost primeval state, well covered with coarse grasses, heather and bracken, with woodland areas chiefly composed of larch, pine trees, and birches. The expanse is generally flat and is only a few feet above sea-level.

There are numerous marshy places and ponds long famous among naturalists as a happy hunting ground for specimens of their various interests. Near the village some mounds are known as Dane Hills and there are also some tumuli of early British origin. The Rivers Derwent and Ouse are quite near, and both have close association with the medieval history of the neighbourhood, Riccall in particular being remembered as the base of the invading armies which culminated in the battle of Stamford Bridge, 1066 A.D. Two miles distant lies East Cottingham, the birthplace and home of the late Snowden Slights, the well-known old wildfowler whose notes of bird life of the Derwent Valley have been duly recorded in his biography.

GEOLOGY.—Mr. J. W. Stather, F.G.S., writes : The area of this excursion is mapped as Keuper Marls, but very little solid rock can be seen owing to the widespread superficial deposits, consisting of warp, lacustrine clay, sand, and gravel. These deposits cover nearly the whole surface between York and the Humber forming the great plain west of the Wolds, which is only broken by the low hills about York, and the morrianic ridge running through Escrick, and the isolated hill of Holme-on-Spalding Moor. This hill, which is composed of Keuper Marl, rises out of the flats to a height of 150 feet above sea-level, and forms a conspicuous object in the landscape. The gravels which cap the hill are mostly composed of material from the west, while those on its flanks are generally local rocks. The geological interest in this excursion lies in the examination of these gravels, and similar deposits in the area, and the determination of the conditions under which they were deposited.

VERTEBRATE ZOOLOGY.—Mr. S. H. Smith supplies the following notes : The common abounds with all the usual resident and summer visiting birds, and the latest visiting species will have arrived. The chief feature is the colony of Black-headed Gulls now established for many years. The number fluctuates considerably, probably because of the difficulty of food supply, this causing the gulls to have a wide range over the surrounding district. They also have an adverse effect on the Lapwing, whose eggs they take as well as the Lapwing's food. There are generally from four to five hundred Black-headed Gulls nesting on the 'gull ponds,' although this number is sometimes greatly exceeded.

Numbers of Mallard and Teal Ducks nest on the common, and there are a few pairs of Shoveller Ducks and Pochard. Of late years Bitterns have been noted, but so far they have not successfully nested there.

Redshanks and Snipe nest on the marshy places, and other species which may be seen are Herons, Short-eared Owl (nests sometimes), Long-eared, Tawny, Barn, and Little Owl, Nightjar, Turtle Dove, Kestrel, and Sparrow Hawks ; Marsh and Hen Harrier have occurred within recent years.

The Nightingale is a rare visitor, while Grasshopper Warblers (rare), Blackcap, and Garden Warblers are summer visitors, also Yellow and Pied Wagtails, Sedge and Reed Warblers nest on the common.

MAMMALS.—Foxes are encouraged in this area and their staple food—rabbits—are quite numerous. Hares are also in evidence, particularly on the surrounding more cultivated lands. A feature of the common is the herd of fallow deer, originally from Escrick Park. They are very shy owing to being repeatedly hunted because of the local depredations on the farms.

Otters frequent the River Derwent near by. The Water Vole is numerous and owing to the marshy nature of the land preventing burrowing, they construct pretty ball-like nests from the pith of 'peeled' sedges.

Long-tailed Field Mice, Short-tailed Vole, and Common Shrew are resident species. Grey Squirrels have multiplied enormously, and the Red Squirrel become very rare. Stoats and Weasels are regularly trapped by the keepers, Brown Rats are always numerous, and some years ago a family of pure albino variety of this species were trapped and sent to me, and specimens are in the York Museum.

REPTILES.—Viper and Grass Snakes used to be fairly common, but of late years they have almost disappeared, perhaps as the result of successive periods of wet. The Blind or Slow Worm also occurs and the common Lizard may be seen.

AMPHIBIA.—The usual species are fairly common.

ENTOMOLOGY.—Dr. W. J. Fordham, F.E.S., writes :

COLEOPTERA.—The Tiger Beetle (*Cicindela campestris*) is common and search should be made for its parasite *Methoca ichneumonoides* which occurs at Allerthorpe. *Blethisa multipunctata* occurs under felled alga in dried up ponds. Numerous good Water Beetles occur, including *Dytiscus circumcinctus*, *Rhantus grapii*, *Hydroporus lepidus*, *striola*, *tristis*, *umbrosus*, *piceus*, *obscurus*, *nigrita*, and *melanarius*, *Agabus unguicularis* and *paludosus*, *Copelatus agilis* and *Ilybius guttiger*.

Heather roots and sedge refuse produce *Bembidion clarki*, *Gymnusa brevicollis*, *Atheta islandica*, *Agonum gracile*, *Conosoma pedicularium*, and *Gabrius stipes*. Dung has given the rare *Philonthus atratus* and fungi *Gyrophaena bihamata*, and *Tetratoma fungorum*. Other interesting Beetles are *Aromia moschata* on willow, *Endomychus coccineus* under bark of birch stumps, *Rhynchites harwoodi* on birch and *Aleochara cuniculorum* in rabbit burrows.

DIPTERA.—The outstanding Diptera of the common are *Spaniotoma angusta*, *Prionocera turcica*, *Oxycera trilineata*, *Theriopectes distinguendus*, *Lasiopogon cinctus*, *Verrallia aucta*, *Paragus tibialis*, *Ischyrosyrphus glaucius*, *Chrysotoxum arcuatum*, *Echinomyia grossa*, *Loxocera fulviventris*, *Urellia stellata*, and *Phora fasciata*.

HYMENOPTERA.—Among the Aculeata may be mentioned *Psen bicolor*, *Physosceles clavipes*, *Leptothorax acervorum*, *Sphecodes pellucidus* and *ferruginatus*, *Halictus rufitarsis*, and *Notozus panzeri*. Sawflies include *Pamphilus vaser*, *Cimbex femorata*, *Lophyrus pini*. *Ento-decta pumilus*, *Empria excisa*, and *Dolerus madidus*, *nigratus*, and *pratensis*.

Ichneumons are *Ichneumon gradarius*, *Phaeogenes bellicornis*, *Pimpla arctica*, *Rhyssa persuasoria*, *Promethus sulcator*, *Polyblastus variitarsis*, and *Meloboris rufiventris*.

HEMIPTERA.—Among the noteworthy bugs of the common are *Asopus punctatus*, *Picromerus bidens*, *Zicrona coerulea*, *Acanthosoma interstinctum*, *Gastrodues ferrugineus*, *Ceratocombus coleoptratus*, *Phytocoris pini*, and *Camptozygum pinastri*.

NEUROPTERA (sensus lato).—The Caddis Flies *Phryganea minor* and *Limnophilus flavicornis*, *bipunctatus*, *stigma*, *vittatus* and *luridus* occur, *Raphidia xanthostigma*, *Chrysopa phyllochroma*, and *Nothochrysa capitata* are found, and among the Dragonflies *Sympetrum scoticum*, *Libellula 4-maculata*, and *Lestes sponsa* have been taken.

MOLLUSCA.—Mr. H. Sowden writes : The following species should be found in suitable situations in the district, *Vitrea cellaria*, *V. alliaria*, *V. nitidula*, *V. crystalina*, *Zonitoides nitidus*, *Hygromia hispida*, *Vallonia pulchella*, *Cochlicopa lubrica*, *Carychium minimum*, *Clausilia bidentata*, *Vertigo antvertigo*, *Vitrina pellucida*, *Euchomulus fulvus*, *Succinea putris*. Among the fresh-water species *Limnaea stagnalis*, *L. palustris*, *L. glabra*, *L. truncatula*, *Pl. albus*, *Pl. vortex*, *Pl. fontanus*, *Pl. crista*, *Paludetrina Jenkinsi*, *Valvata piscinalis*, *Unio pictorum*, *U. tumidus*, *Anodonta cygnea*, *Vivipara vivipara*,

may be expected, and a special look-out should be kept in the River Derwent for '*Vivipara costecta*' as it would be most interesting if this species should be rediscovered and found still in existence near the district 'Wressle' where Dr. Martin Lister original found it, 1678-81. Collectors should always bear in mind that there is ever the possibility of some hitherto unrecorded species turning up to reward the diligent worker.

The following species were obtained in the neighbourhood during August Bank Holiday week-end, 1921: In the River Derwent, *Bithynia tentaculata*, *Neritina fluviatilis*, *Pisidium amnicum*, *Sphaerium corneum*, and *Limnaea pereger*. From a pond and the dykes in the Ings towards Thorganby were obtained *Planorbis corneus*, *Pl. spirorbis*, *Pl. contortus*, *Pl. umbilicatus*, *Valvata cristata*, *Sphaerium corneum*, *Limnaea pereger*, *Aplecta hypnorum*, *Physa fontinalis*, *Sphaerium lacustre*, *Pisidium subtruncatum*, *P. obtusale*, and *P. milium*. The last named was at that time a new record for Yorkshire S.E. vice county area.

On the road side *Helix nemoralis* is to be found in many interesting varietal forms.

FLOWERING PLANTS.—Mr. T. Stainforth writes: The botany of Skipwith and Riccall Commons has been fairly well investigated. Apart from the common itself, good collecting ground is to be found on the banks of the Ouse between Barlby and Riccall, and in ponds near Barlby on the south-west of Riccall Common. The Line Pits at Skipwith are good.

On the common and its borders the following plants may be found either flowering or in sufficiently recognisable condition: *Ranunculus sardous*, *Chelidonium majus*, *Corydalis claviculata*, *Fumaria Boraei*, *Nasturtium palustre*, *Polygala vulgaris*, *Erodium cicutarium*, *Rhamnus Frangula*, *Ornithopus perpusillus*, *Potentilla silvestris*, *procumbens*, and *palustris*, *Poterium Sanguisorba*, *Sanguisorba officinalis*, *Drosera rotundifolia* and *intermedia*, *Vaccinium Myrtillus*, *Erica Tetralix* and *cinerea*, *Pyrola minor*, *Hottonia palustris*, *Samolus Valerandi*, *Menyanthes trifoliata*, *Pinguicula vulgaris*, *Mentha pulegium*, *Littorella uniflora*, *Scleranthus annuus*, *Rumex maritimus*, *Salix repens*, var. *argentea*, *Juncus squarrosus* and *effusus*; the four Lemnas; *Alisma ranunculoides*, *Eleocharis multicaulis*, *Scirpus caespitosus* and *fluitans*, *Eriophorum vaginatum* and *angustifolium*; the Carices, *dioica*, *pulcaris*, *muricata*, *echinata*, *ovalis*, *panicata* and *flava*; *Apera Spica-venti*, *Deschampsia flexuosa*, *Molinia varia*, and *Nardus stricta*.

In the neighbourhood of the Ouse Bank at Barlby and Riccall have occurred *Aquilegia vulgaris*, *Thalictrum flavum*, *Saponaria officinalis*, *Geranium pratense*, *Pimpinella major*, *Allium scorodoprasum*, *vineale*, *oleraceum*, and *carinatum*, *Colchicum autumnale* (now in fruit), *Orchis ustulata* and *Morio*, *Listera ovata*.

The Rubi recorded for the Skipwith area are *plicatus*, *carpinifolius*, *rhamnifolius*, *pulcherrimus*, *macrophyllus*, *leucostachys*, *mucronatus*, *Koehleri*, and *dumetorum*.

FERNS, HORSETAILS, ETC.—The vascular cryptogams recorded include *Lomaria spicant*, *Asplenium ruta-muraria* (Skipwith Church), *Athyrium Filix-foemina*, *Lastraea oreopteris* and *Filix-mas*, *Osmunda regalis*, *Oploglossum vulgatum*, *Botrychium lunaria*, *Equisetum palustre* and *limosum*, *Isaetes lacustris*, and *Pilularia globulifera*. (It would be interesting to rediscover the two last named.)

ALGAE (CHARACESE).—*Nitella translucens* has been found in ponds at Barlby end of common.

Mr. A. K. Wilson (Hull) writes: The following plants additional to those given above, have occurred at Skipwith: *Hypericum elodes*, *Mentha verticillata* var. *rivalis*, *Chenopodium alba* var. *serratifrons*, *C. alba* var. *sicifolium*, *C. alba* var. *sub-sicifolium*, *Rumex limosum*, *Juncus supinus*, *Carex stellatus*, *Scirpus setaceus*, *Schoenus nigricans*, *Sieglingia decumbens*.

The following 'aliens' have been found in the district: (Riccall) *Trifolium incarnatum*, *Trigonella polycerata*, (Skipwith) *Xanthium spinosum*, *Veronica pardalianches*, *Arnoseris minima*, *Tagetes minuta*.

Tea will be served at Headquarters at 4 p.m. and will be followed by a General Meeting at 4.45 p.m. for the election of new members and to receive reports from the various sections.

The next meeting will be at Redmire, V.C. 65, on July 6th.

Yorkshire Naturalists' Union.

President:

W. WATSON, D.Sc. (Lond.), A.L.S., Taunton.

Hon. Secretary:

CHRIS A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer:

S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary:

J. P. UTLEY, B.Sc., Leyburn.

The 426th Meeting

WILL BE HELD AT

REDMIRE

for the investigation of Bolton Ghyll, Apedale Beck,
and East Bolton Moor.

On SATURDAY, JULY 6th, 1940

HEADQUARTERS.—The King's Arms, Redmire. Proprietor, Mr. J. Alderson.

TRAVEL FACILITIES.—

Train Service.

	a.m.	a.m.	p.m.	p.m.
Northallerton	7-5	11-28	4-8	6-15
Leyburn	8-5	12-28	4-58	7-5
Redmire	8-22	12-46	5-16	
Hawes	8-50	1-11	5-41	
Garsdale	9-2		6-3	
Garsdale		10-46	3-42	6-30
Hawes		11-6	4-0	6-47
Redmire		11-34	4-24	7-10
Leyburn	7-45	11-49	4-39	7-27
Northallerton	8-36	12-40	5-35	8-28

Bus Services.

	a.m.	p.m.	p.m.		a.m.	p.m.	p.m.
Harrogate	8-35	12-35	4-5	Hawes	8-45	1-45	5-45
Ripon	9-10	1-10	4-40	Redmire	9-30	2-30	6-30
Leyburn	10-27	2-27	5-57	Leyburn	9-46	2-46	6-46
Redmire	10-46	3-16	6-16	Ripon	10-58	3-58	7-58
Hawes	11-31	4-1	7-1	Harrogate	11-35	4-35	8-35

MAP.—Ordnance Sheet, No. 20.

ROUTE.—Bolton Ghyll, Apedale Beck to East Bolton Moor. Starting from Headquarters at 10-45 a.m.

PERMISSION.—Mr. O. F. Cooke Yarborough writes : I have shown Lord Bolton your letter and he is quite willing for you to visit Bolton Ghyll and Apedale, if you will see that the members are careful about smoking, glass, etc., as if it is dry the Moors might easily catch fire.

GEOLOGY.—Dr. H. C. Versey writes : The Redmire region offers opportunities for the study of both solid and glacial geology. Apedale Beck crosses nearly a full succession of the Yoredale rocks, which form the characteristic Scars north of the village. The Main Limestone forms the prominent Redmire Scar and above it occur the cherts which have been quarried for pottery manufacture. The area is crossed by several mineral veins of the Swaledale network and typical minerals may be collected from old tips in Bolton Ghyll.

Evidences of glaciation appear both on the high ground and in the valley. Boulder clay at 1,300 ft. O.D. has caused a diversion of Apedale Beck, and above the level there is the large overflow channel of Forest Gill which took the lateral drainage of Wensleydale over into Swaledale. The hummocky ground on both sides of the River Ure south of Redmire marks the site of one of the retreated moraines of the valley glacier.

ORNITHOLOGY.—Mr. J. P. Utley, B.Sc., writes : The district comprises open moorland and 'wham' ground, heavily-wooded ravine, and in the lower regions brushwood and scrub bordering the stream. The altitude rises from 500 at Redmire to 1,800 on East Bolton Moor. There is promise of all the usual birds of the N.W. Dales. In Bolton Ghyll, Woodcock breed and Heron have been known to do so. In Apedale Beck (the continuation of Bolton Ghyll) Grey Wagtail should be found. On the moors at the head of the beck Blackcock may be seen. I have observed Lesser Spotted Woodpecker in the woods and Merlin breed on the moors.

The following birds have also been recorded from the district : Tree Sparrow, Reed Warbler, Grasshopper Warbler, Nightjar, and Red-backed Shrike.

BOTANY.—Mr. C. A. Cheetham writes : The botanical features of the ghyll do not appear to be well known, and definite records will be valuable. In the wooded area, *Epipactis latifolia*, *Ophrys muscifera*, and *Pyrola minor* have been recorded, and here *Trollius Europæus*, *Lathræa squamaria*, *Gagea lutea*, and possibly *Helleborus viridis* should be found. On the limestone scars in the dale *Hutchinsea petraea* is not uncommon, whereas in Wharfedale and in the mountain limestone area generally it is very local ; on these scars *Hippocrepis comosa* will be found, and *Orobanche rubra* has occurred while in the scree at the foot the fern, *Polypodium calcareum*, is plentiful. In the turf on the open country *Viola lutea* is abundant and occasionally *Saxifraga granulata*. Near lead workings *Arenaria verna* makes a fine show and with it we generally find *Thlaspi occitanum* and *Botrichium lunaria*. At Locher Tarn on the moorland above *Galium uliginosum* grows, and under the heather on the moor *Listera cordata*. Near Bolton Castle, *Berberis vulgaris* and *Parietaria officinalis* are to be found, and near at hand is *Geranium phæum*. *G. sylvaticum* is very plentiful in the higher reaches of the dale. In the flaggy limestone quarries nearer Wensley, *Teesdalia nudicaulis*, *Arenaria tenuifolia*, and *Sagina ciliata* are recorded, and in grit tumble *Asplenium adiantum-nigrum* occurs.

Tea at Headquarters at 5 p.m. Plain 1/6, with meat from 2/-, to be followed by a General Meeting for election of members and presentation of reports by the various sections.

Yorkshire Naturalists' Union.

President:

W. WATSON, D.Sc. (Lond.), A.L.S., Taunton.

Hon. Secretary:

CHRIS A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer:

S. D. PERSY FISHER, Sackville Street, Leeds.

Divisional Secretary:

Miss C. M. ROB, Catton Hall, Thirsk.

The 427th Meeting

WILL BE HELD AT

WOMBLETON

for the investigation of the low-lying country to the south of the Helmsley-Kirbymoorside Road.

On Saturday, AUGUST 3rd, 1940

HEADQUARTERS.—The Plough Inn, Wombleton, Nawton, Yorks. Proprietor, Mrs. Sails.

TRAVEL FACILITIES.—Nearest railway station, Nawton, on the York and Gilling line, $1\frac{1}{2}$ miles. Buses at 2-hour intervals both ways on the Pickering-Helmsley route.

MAP.—No. 22 of the 1-in. large sheet series of the Ordnance Survey.

NOTE.—Owing to the cancellation of the August Bank Holiday the usual week-end meeting will not be held but an excursion, followed by a tea and meeting, will be held on Saturday, August 3rd.

For those members who want accommodation over the week-end Mrs. Sails at the Plough Inn, Wombleton, will provide board and lodging at 10/- per day. Members who wish to take advantage of this are asked to make early application.

The suggested excursion is to the River Rye from Nunnington to Ness. Those going on foot will leave Wombleton at 10 a.m. for Nunnington where late-comers may overtake the party for lunch at the Inn at noon.

For those spending the week-end in the district, Kirkdale, with its interesting Church and Cave is close at hand, members should refer to Kendall and Wroot, *Geology of Yorkshire*, p. 577, or to the *Victoria History of Yorkshire*, Vol. I, p. 101, for a description of the Cave and its fauna. The lower portion of Ryedale is also accessible and geologists will find the situation interesting owing to the Coxwold-Gilling fault-trough, which is

just south of the area and also the well-known Oswaldkirk artesian well, mentioned in Kendall and Wroot, *Geology of Yorkshire*, p. 805.

The flora and fauna of this low-lying country is not well known and full lists should be made of the findings of all sections.

Miss Rob writes : I have never visited Wombledon itself, but the district round has some very nice plants. Near Kirkdale Church, *Lamium galeobdolen*, *Neottia nidus-avis*, and *Habenaria chlorantha* are to be found, while at Caucklass Bank, between Nunnington and Hovingham, there is *Actea spicata*, *Astragalus glycyphyllos*, *Inula Conyza*, *Brachypodium pinnatum*, *Specularia hybrida*, *Carduus eriophorus*, and *Carex divulsa*. *Potamogeton densus* occurs in the River Rye at Nunnington, and *Ranunculus fluitans* in several places in the same river. Baker's *North Yorkshire* gives a record for *Limosella aquatica* in wet places near Normanby Bridge, and this should be looked for if the party are anywhere near this place. Near Kirbymoorside *Atropa Belladonna*, *Caucalis nodosa*, *Paris quadrifolia*, and *Carex helodes* occur, also *Ribes alpinum*. Another record in Baker that requires confirmation is that of *Potamogeton Zosterifolius*, in a rivulet near Hovingham, should any members get so far.

Mr. Ralph Chislett writes : Most visitors to the district will have explored the dales and moors to the north of the Helmsley-Kirbymoorside road. The Vale of Pickering has been explored in parts of recent years but I know of no notes of birds of the western end of the Vale. Consequently a list of birds observed, with notes of status, around Wombledon, particularly south from the village, would be welcome. Early passage migrants may be seen as well as local breeders with their young.

As Miss Rob is undertaking duties in Catterick she will be unable to be present and we are grateful to Mr. E. G. Highfield, of Pickering, and to Mrs. Golding, of Wombledon, for making the arrangements for this meeting.

A tea will be arranged at Headquarters at 5-30 p.m., and this will be followed by a meeting for the election of new members and for the presentation of reports on the excursion.

YORKSHIRE NATURALISTS' UNION.

For particulars apply to

The Hon. Secretary, Austwick, via Lancaster; or to the Hon. Treasurer, S. D. Persy Fisher, Sackville Street, Leeds.

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Members are entitled to receive 'The Naturalist' and all other current publication of the Union, free.

} [Signature
of Proposer
and
Seconder.]

Yorkshire Naturalists' Union.

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Hon. Secretary:

CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer:

S. D. PERSY FISHER, Sackville Street, Leeds.

The 428th Meeting

WILL BE THE
FUNGUS FORAY
AT

KILNSEY

for

GRASS WOODS

On Saturday, September 14th to
Thursday, September 19th, 1940

MYCOLOGICAL COMMITTEE:

Chairman: Dr. J. GRAINGER, Huddersfield.

Convener: Miss J. GRAINGER, Skelmanthorpe.

Recorders: Dr. J. GRAINGER, Huddersfield; W. G. BRAMLEY, Bolton Percy.

Rep. on Executive: R. FOWLER JONES, Ilkley.

HEADQUARTERS.—Tennant Arms Hotel, Kilnsey, Skipton in Craven.
Telephone: Grassington 101. Proprietor: Mr. E. Smith. Terms: 10/-
per day for Bed, Breakfast, Sandwiches and Dinner.

PERMISSION to visit Grass Woods has been given by the Chatsworth Estates Co.

EXCURSIONS.—Daily programmes will be arranged for the systematic study of Grass Woods.

MEETING.—The Annual Meeting will be held at Headquarters on Saturday, September 14th, at 8 p.m.

LECTURES.—The Chairman's Address will follow the Annual Meeting. Subject: 'Historical Ecology of Fungi.' Mr. A. A. Pearson hopes to deliver a lecture on 'New Diagnostic Characters in the Agarics.' An Exhibition of Fungi will be held on Monday, September 16th, at Headquarters.

BOOKS AND MAPS.—Members are asked to bring Microscopes, Books and Maps, Ordnance Sheet 26.

The next meeting will be the Annual Meeting, December 7th, 1940; this will probably be in Bradford as present conditions make the intended meeting at Scarborough impossible.

Yorkshire Naturalists' Union.

YORKSHIRE NATURALISTS' UNION.

For particulars apply to

*The Hon. Secretary, Chris. A. Cheetham, Austwick via Lancaster ;
or to The Hon. Treasurer, S. D. Persy Fisher, Sackville Street, Leeds.*

This form, when filled up and signed, should be sent to the Hon. Secretary of the Union, accompanied by the amount of the first year's subscription.

The Subscription of 15/- entitles the members to receive the Union's monthly magazine, "The Naturalist," as well as the "Transactions."

Persons related to and resident in the family of a member are admitted as 5/- members, to enable them to attend excursions, but not to receive the publications.

Qualification for Life Membership:—A Donation of 11 Guineas.

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.....

.....[Address.]

wishes to become a member of the Yorkshire Naturalists' Union, and will subscribe
FIFTEEN SHILLINGS (15/-) per annum until the end of the year in which written
resignation is given.

(xviii)

.....[Signature of
Proposer
and
Seconder.]

Elected.....I9 at.....

.....Chairman's Signature.

Yorkshire Naturalists' Union.

President:

W. WATSON, D.Sc. (Lond.), A.L.S., Taunton.

Hon. Secretary:

CHRIS. A. CHEETHAM, F.R.E.S., Austwick, *via* Lancaster.

Hon. Treasurer:

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Vice-Presidents:

- PROF. SIR A. C. SEWARD, M.A., F.R.S., Cambridge.
THOMAS SHEPPARD, M.Sc., F.G.S., F.S.A.Scot., A.L.S., Hull.
PROF. W. GARSTANG, M.A., D.Sc., F.Z.S., Oxford.
H. B. BOOTH, F.Z.S., M.B.O.U., Ben Rhydding.
SIR A. SMITH WOODWARD, LL.D., F.R.S., F.L.S., F.G.S., London.
PROF. J. H. PRIESTLEY, D.S.O., B.Sc., F.L.S., Leeds.
EDWIN HAWKESWORTH, Cross Gates, Leeds.
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H. HAMSHAW THOMAS, M.B.E., F.R.S., M.A., Sc.D., F.G.S., Cambridge.
RALPH CHISLETT, F.R.P.S., M.B.O.U., Rotherham.

The 429th Meeting and 79th Annual Meeting

WILL BE HELD AT THE

TECHNICAL COLLEGE,
BRADFORD

On Saturday, December 7th, 1940

The Annual Meeting, which was to have been held at Scarborough this year, has had to be transferred to Bradford owing to difficulties of travel and lighting restrictions. We are grateful to the College authorities for the kind assistance given to us

and for the excellent arrangements they have made for our convenience for holding the meeting during daylight hours.

PROGRAMME

- 11-0 a.m. Sectional and Committee Meetings. Notices indicating the rooms for the various meetings will be displayed at the entrance to the College.
- 11-30 a.m. Executive Meeting.
- 12 noon. The General Committee Meeting.
- 1-0 p.m. Lunch will be provided at 1/9 per head at the Union Buildings, Mannville Terrace, for members who notify Mr. A. Malins Smith, Technical College, Bradford, in advance by postcard. Members are earnestly asked to do this at once and not defer it and then forget as they do so often.
- 2-0 p.m. The Annual Meeting and the Presidential Address.

The Principal of the College, H. Richardson, M.Sc., will welcome the Union on their visit.

Will members of the Executive and of the General Committee take note of the above times as no further notice of these meetings will be sent.

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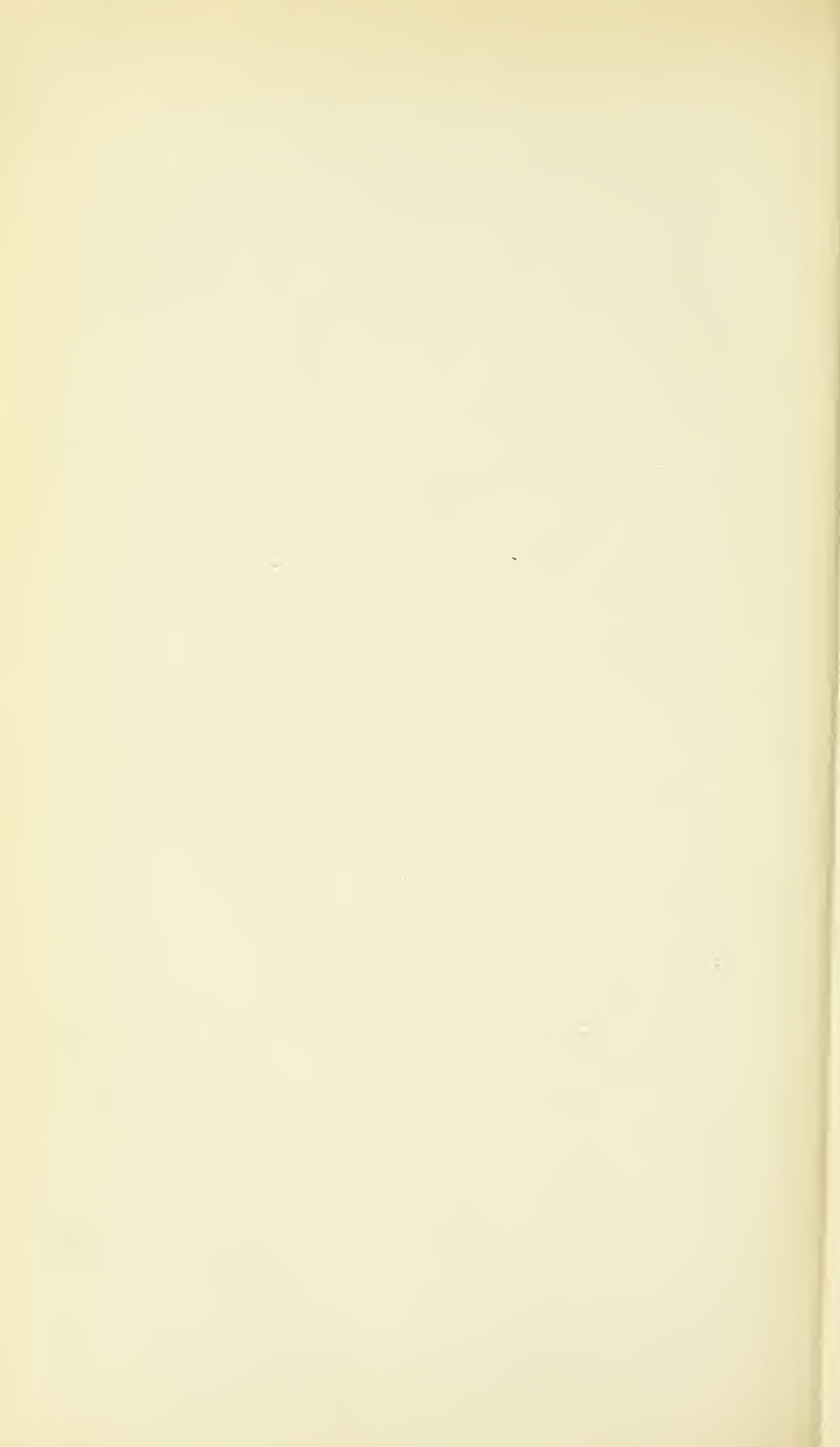
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